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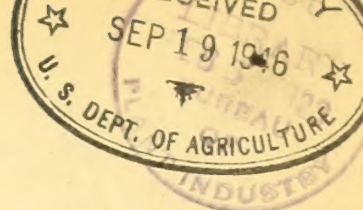
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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15

January 15, 1923

No. 1

Personnel (Jan. 1-15) and Field Station (Dec. 1-31) Issue.

PERSONNEL ITEMS

Dr. C. R. Ball, Cerealist in Charge, on January 10 addressed the Maryland Corn Growers' Association at Frederick, on the subject of Federal investigations of corn production, improvement, and diseases. He reports that the meetings of the Maryland Agricultural Society and affiliated societies were well attended and were very successful sessions. The room assigned to the meeting of the Maryland Crop Improvement Association was filled to overflowing and the audience was keenly interested in the cereal and forage crop subjects under discussion. The Corn Show was in three sections: Interstate, State, and Frederick County, and some excellent material was found in all sections.

Ray J. Davis, field assistant in cereal disease investigations in cooperation with the Wisconsin Agricultural Experiment Station since October, 1922, completed his duties January 15, on which date his appointment was terminated.

Mrs. Rose E. Gamble, botanical artist for the Office for several years, resigned January 15, 1923.

Dr. G. N. Hoffer, pathologist in the cooperative investigations of corn root, stalk, and ear-rot diseases at the Purdue University Agricultural Experiment Station, LaFayette, Ind., will address the annual meeting of the National Cannery Association at Atlantic City, N. J., during the week of January 22.

C. H. Kyle, agronomist in corn investigations, left Washington January 15 to visit points in the corn-growing region of the South, and will consult with officials of State agricultural experiment stations and private growers regarding future cooperative corn experiments.

M. N. Levine, assistant pathologist in stem-rust investigations in cooperation with the Minnesota Agricultural Experiment Station, who has been in Washington since November 20, conducting special greenhouse studies on biologic forms of stem rust, returned to St. Paul, Minn., January 4.

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H. H. McKinney, assistant pathologist engaged in the investigation of rosette and take-all diseases of wheat, in cooperation with the Wisconsin Agricultural Experiment Station, came to Washington January 5 to consult with administrative officials. At the Office seminar January 11, he presented a general summary of the mosaic symposium held at the recent Boston meetings, including a discussion of intracellular bodies associated with the rosette disease of wheat. His address was illustrated by lantern slides. Mr. McKinney left January 13 for his headquarters at Madison, Wis.

R. W. Smith, assistant agronomist in charge of the cooperative cereal experiments at the Dickinson Substation, Dickinson, N. Dak., returned to his headquarters January 6, after spending several weeks in Washington.

Hubert K. Snively, field assistant in barberry eradication in Indiana since July 1, 1922, completed his field duties December 31, on which date his appointment was terminated.

D. E. Stephens, superintendent of the Sherman County Branch Station, Moro, Oreg., arrived in Washington January 8 to write his annual report on the cereal experiments conducted in cooperation with the Oregon Agricultural Experiment Station, and to prepare for publication the results of these experiments.

VISITORS

Dr. W. D. Valleau, plant pathologist at the Kentucky Agricultural Experiment Station, was an Office visitor January 2.

MANUSCRIPTS AND PUBLICATIONS

The following three papers have been approved for publication in The Journal of Heredity, without compensation to the authors:

"A Multiflorous Variation in Burt Oats," by F. A. Coffman and Karl S. Quisenberry.

"The Use of Back Crosses in Small-Grain Breeding," by Harry V. Harlan and Merritt N. Pope.

"A New Method of Self-Pollinating Corn," by Merle T. Jenkins.

Page proof of Farmers' Bulletin 1364, entitled "The Durum Wheats," by J. Allen Clark and John H. Martin, was read January 9, 1923.

Page proof of the paper scheduled for publication in the Journal of Agricultural Research, entitled "A Cytological Study of Infection of Baart and Kanred Wheats by Puccinia graminis tritici," by Ruth F. Allen, was read January 11, 1923.

Page proof of the paper scheduled for publication in the Journal of Agricultural Research, entitled "The Accumulation of Aluminum and Iron Compounds in Corn Plants and its Probable Relation to Root Rots," by G. N. Hoffer and R. H. Carr, was read January 11, 1923.

U. S. Dept. Agr. Bul. 1120, entitled "Investigations of Heat-Canker of Flax," by C. S. Reddy and W. E. Brentzel, was received from the Government Printing Office January 12, 1923.

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FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R. R. Childs).
No report.

SOUTH CAROLINA

Pee Dee Substation, Florence (J. M. Hammerly). No report.

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor). No report.

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love).
No report.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins). (Jan. 5)
Thrashing operations were completed December 8, just before the heavy rains set in, which have continued at intervals ever since. In general, the yields were very satisfactory and the quality of the rice is very much better than in 1921. Through the American Rice Growers' Association, requests have been received for more Japanese seed rice than we are able to supply. We could sell a great deal of Fortuna if we had the seed.

W. B. Gabbert, manager of the Farmers' Land and Canal Co., of Lake Charles, recently visited the Station to discuss fertilizers and soy beans.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler). No report.

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer). No report.

IOWA

Agricultural Experiment Station, Ames (L. C. Burnett). No report.

Iowa State College, Ames (Barberry Eradication, J. H. Muncie). No report.

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert). No report.

Post Office Building, Urbana (Barberry Eradication, G. C. Curran).
(December report). During December the annual report for the calendar year was prepared.

INDIANA

Purdue University Agricultural Experiment Station, LaFayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer). No report.

Purdue University Agricultural Experiment Station, LaFayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains). No report.

Purdue University, College of Agriculture (Barberry Eradication, K. E. Beeson). No report.

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, John W. Baringer). No report.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy). No report.

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson). No report.

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, William A. Walker). No report.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman). No report.

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander). No report.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger). No report.

KANSAS

Agricultural Experiment Station, Manhattan (B. B. Bayles for John H. Parker). (December report).

Weather and Crop Conditions in Kansas for first two weeks of December.

First Week in December: Wheat is in good to excellent condition over all the eastern half of the State, but in the western half it is generally reported as poor. It is just coming up and beginning to show green in the north-central counties and not quite so far along in the western third; elsewhere, it generally covers the ground. It retains its green color and will go into the winter in fine shape except in the extreme western counties where the rains have been light all fall and there is not enough moisture in the ground to insure its further growth. Mild temperatures and high winds during the week tended to aggravate this condition in the west by drying out the ground still further.

Second Week in December: There was no fall of moisture except some light rains the fore part of the week.

Wheat is practically dormant as a result of the advent of wintry weather. In the eastern half and some of the northwestern counties it has gone into the winter in fine condition with plenty of moisture in the ground. From Dodge City south and west it is barely coming up and the ground is much too dry. High northwest winds that accompanied the cold wave on Monday afternoon and night were detrimental to wheat, which had no protection in the way of a snow cover, but it is too soon to ascertain the extent of the damage yet. In the eastern counties wheat has matted down, as it usually does at the beginning of winter, and practically covers the ground, especially in the Max Valley.

Corn husking is done except 5 to 20 per cent, which has been deferred for various reasons and will drag through the winter. Stock have been turned into fields after corn has been gathered.

Hays Branch Experiment Station, Hays (B. B. Bayles). No report.

COLORADO

Akron Experiment Farm, Akron (F. A. Coffman). No report.

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren). No report.

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel). No report.

WYOMING

Cheyenne Experiment Farm, Archer (A. L. Nelson). No report.

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter). No report.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Hutton). No report.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel). No report.

Agricultural Experiment Station, Agricultural College (Barberry Eradication, George C. Mayoue). No report.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.). No report.

Dickinson Substation, Dickinson (Ralph W. Smith). No report.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May). No report.

State College of Agriculture, Bozeman (Barberry Eradication, W. H. Christopher). No report.

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (A. E. McClymonds). No report.

OREGON

Sherman County Branch Station, Moro (D. E. Stephens). No report.

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones). (Jan. 8) We have had but little sunshine during the past six weeks. The total precipitation for December was 8.11 inches, which is several inches above normal.

The rice market is quiet, and the crop is moving slowly. The price for grade No. 1 paddy is less than for the same time one year ago.

Early-sown fall grain looks well, but late-sown crops do not look so well, because of some loss due to excessive moisture on land that is not well drained.

University Farm, Davis (V. H. Florell). (Dec. 16) The weather has continued rainy for the past ten days and over. The soil is now well soaked and streams are beginning to be more or less swollen. The range grasses and volunteer cereals are making good growth and stockmen are generally optimistic about conditions.

The present rain-storm began only a few days after seeding of the cereal experiments was completed. The cold weather preceding the storm delayed germination but soon after the rains commenced emergence began. The earliest-sown cereals emerged on December 6 and the latest sowings have been up only a few days. All experiments are in very good condition with particularly good stands in the plats. The nurseries also have good stands but in the latest sowings which were hand-planted there is some lack of uniformity in emergence because of variation in depth of seeding.

A few odds and ends of nursery material remain to be sown, including a lot of barleys for the classification and identification nursery. These represent additional material just received which will be sown as soon as the weather permits.

Agricultural Experiment Station, Berkeley (Fred N. Briggs). No report.

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Bureau of Plant Industry, U. S. Dept. of Agriculture.
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Vol. 15

January 31, 1923
Personnel (Jan. 16-31) and Project Issue

No. 2

PERSONNEL ITEMS

Olaf S. Amendt, assistant pathologist, who has completed four months of post-graduate study in plant pathology and genetics at Cornell University, came to Washington January 31 to prepare a manuscript for publication on the rust resistance of wheat as the result of investigations conducted in cooperation with the Minnesota Agricultural Experiment Station, and to confer with officials of the Office regarding further cooperative research to be resumed upon his return to his headquarters at St. Paul, Minn.

Dr. C. R. Ball, cerealist in charge, on January 26 gave an illustrated address on the subject of the National weed problem as related to crop production before the Second Annual Convention and State Corn and Grain Show held by the Virginia Crop Improvement Association at Charlottesville, Va., January 25 and 26. There was a large attendance at all the sessions, and so great was the interest in the features of the second day that it was voted to forego the adjournment for luncheon until the program should be concluded. The speakers laid much emphasis on the necessity for clean seed of varieties of farm crops adapted to the locality where they are to be grown.

W. E. Brantzel, assistant pathologist in the investigation of diseases of flax, in cooperation with the North Dakota Agricultural Experiment Station, left January 25 for his field headquarters, having spent a month in Washington in the preparation of his annual report and in special studies of certain phases of flax disease.

Elwin D. Griffin, field assistant in barberry eradication in Illinois, during the summer of 1922, has been put in charge of the office of the State leader, Gordon C. Curran, during the latter's absence at the University of Minnesota where he is carrying post-graduate studies during the winter quarter. Mr. Griffin's address is Post Office Building, Urbana, Ill.

Dr. G. M. Hoffer, pathologist in charge of the investigation of root, stalk, and ear rots of corn, in cooperation with the Purdue University Agricultural Experiment Station, La Fayette, Ind., came to Washington January 23 at the conclusion of the annual meeting of the National Canners' Association at Atlantic City. In the afternoon he gave an illustrated talk before a special seminar of the Office on the subject of the accumulation of iron and aluminum compounds in corn plants and its probable relation to disease. Dr. Hoffer left January 30 for his headquarters at La Fayette, Ind., after consultation with administrative and other officials.

Lynn D. Hutton, assistant pathologist and State leader of barberry eradication with headquarters at Brookings, S. Dak., has been granted permission to carry graduate studies at the South Dakota State College during the winter quarter, looking toward the degree of Master of Science in Agriculture. The course of study will include advanced histology, taxonomy, and investigations of a special rust problem.

Dr. A. G. Johnson, pathologist in charge of the investigations of diseases of cereals caused by imperfect and sac fungi, left January 31 to visit points in Wisconsin, Illinois, and Indiana in the interests of cereal disease investigations and to confer with officials of agricultural experiment stations regarding cooperative relations.

Jenkin W. Jones, assistant agronomist in charge of cooperative rice experiments on the Biggs Rice Field Station, Biggs, Calif., has been granted permission to pursue graduate study at the University of California during the winter quarter, looking toward the degree of Master of Science. The course includes genetics, plant breeding, and botany of crop plants.

C. E. Kyle, agronomist in corn investigations, returned to Washington January 28. He visited the Pee Dee Substation at Florence, S. C., and the Georgia Coastal Plain Experiment Station, at Tifton, Ga., where cooperative corn investigations are under way. He also conferred with officials of the agricultural experiment stations at Auburn, Ala., Baton Rouge, La., and Agricultural College, Miss. At Knoxville, Tenn., Mr. Kyle consulted with Vice-Director C. A. Moore of the Tennessee Agricultural Experiment Station, regarding the cooperative corn investigations that are in progress there in charge of L. S. Mayer, assistant agronomist of this Office.

Edmund B. Lambert, a former part-time employee in the cooperative barberry eradication campaign in Minnesota, on February 1 was appointed agent to devote his entire time to the immediate details of rust epidemiology investigations, under the general supervision of Dr. E. C. Stakman. He also will have general charge of the record of the development of stem rust and will assist in the preparation of manuscripts and in summarizing data which already have been accumulated.

Ralph W. May, scientific assistant in charge of investigations in the production and improvement of cereals at the Judith Basin Substation, Moccasin, Montana, has been granted permission to pursue graduate study from January 3 to March 24, 1923, at the Montana State College, looking toward the degree of Master of Science in Agriculture. The course of study includes advanced crop investigations, advanced plant physiology, review of literature, and research in plant nutrition.

Emil H. Ostrom, field assistant in rust survey in Minnesota has been granted leave without pay in order that he may pursue graduate studies in plant pathology, plant physiology, and plant chemistry at the University of Minnesota, during the winter quarter.

John H. Parker, agent of this Office in plant-breeding research conducted in cooperation with the Kansas State Agricultural Experiment Station, gave a talk before the Officer seminar January 18 in the assembly room of the Dieber Building. He discussed the economic importance of the various crops grown in Kansas, reviewed the history of the plant-breeding experiments at Manhattan with special reference to the development of Kanred winter wheat, and outlined the improvement work now in progress. He pointed out that the close cooperative relations existing among the departments of the Kansas institution make possible the more ready solution of the problems which confront the farmers of the State.

Mr. Parker left Washington January 20 for Ithaca, N. Y., where he conferred with members of the department of plant breeding of the Cornell University Agricultural Experiment Station before returning to his official station at Manhattan.

F. D. Richey, agronomist in charge of corn-breeding and cultural investigations, left Washington January 27 for Hudson Heights, Quebec, where he will select self-fertilized seed of very early-maturing varieties of corn collected by Mr. T. B. Macaulay, of Montreal, in the northern edge of the United States, in Canada, and in southern Argentina and grown by him on his country place at Hudson Heights during the season of 1922.

Before returning to Washington Mr. Richey will stop at Ithaca, N. Y., to confer with officials of the Cornell University Agricultural Experiment Station regarding various problems of corn investigations.

Wilmer G. Stover, assistant professor of botany in Ohio State University and former collaborator with this Office in cereal disease investigations, was appointed collaborator, effective January 16, to make observations on the spread of rust in Ohio as the result of barberry infection and in other ways to assist in the campaign for the eradication of the common barberry.

The following subjects were discussed at the Cereal Investigations seminar, Thursday, January 25: "New Seed Disinfectants for the Control of certain Cereal Smuts," by T. E. Tisdale, and "Hot-Water Seed Treatments for the Control of Loose Smut in Wheat, with Special Reference to Seed Injury," by V. E. Tapke.

Dr. Tisdale discussed briefly the use of copper carbonate for the control of bunt in wheat. Special emphasis was given to the fact that copper carbonate does not cause seed injury, that it is cheap and easy of application and that it is as effective, if properly applied, as copper-sulphate-lime and formaldehyde. A history of the use of organic mercury compounds in Germany and their more recent development in the United States was given. These materials are not likely to compete with copper carbonate as a means of controlling bunt in wheat but there is a possibility that they will be of more value for controlling the smuts of oats and barley, for which copper carbonate is not so effective. These compounds did not cause seed injury when properly applied and in many cases appeared to stimulate the growth of the young seedlings. They controlled the smuts very satisfactorily. The ones showing the best results so far are Ubrulon, Chlorophol, Corona No. 620, and Semesan. It is not known at present just how expensive these materials will be.

Mr. Tapke, in discussing hot-water seed treatments for the control of loose smut in wheat, with special reference to seed injury, took up the following phases of the work: (1) A brief history of the methods used to control loose smut in wheat; (2) the development of the central treating stations in Indiana and other States, at which the modified hot-water treatment is applied to the seed for the control of loose smut; (3) the important role played by the seed coat in protecting the seed from treatment injury; and (4) the development of new and improved hot-water methods for the control of wheat loose smut. The talk was illustrated with 25 lantern slides.

MANUSCRIPTS AND PUBLICATIONS

A paper entitled "The Minimum Temperature of Germination of Seeds," by F. A. Coffman, has been approved for publication in the Journal of the American Society of Agronomy.

A paper entitled "Prolific and Other Dwarf Oats," by T. R. Stanton, has been approved for publication in the Journal of Heredity.

Galley proof of paper entitled "Hydrogen-Ion Concentration and Varietal Resistance of Wheat to Stem Rust and Other Diseases," by Annie May Hurd, was read January 27, 1923. This paper is scheduled to appear in the Journal of Agricultural Research.

U. S. Dept. Agr. Bul. 1127, entitled "Some New Varieties of Rice," by Charles E. Chambliss and J. Mitchell Jenkins, was received January 20, 1923, from the Government Printing Office, bearing date of issuance of Jan. 12, 1923.

Farmers' Bulletin 1301, entitled "The Common White Wheats," by J. Allen Clark, John H. Martin, and C. E. Leighty, was received from the Government Printing Office January 26, 1923.

TRANSLATIONS

Saccharin-Fabrik, Magdeburg. Ergebnisse der Germisanbeizung gegen Steinbrand und Schneeschimmel des Weizens und Roggens, Streifenkrankheit und Huterand der Gerste, Haferbrand und andere Pilzkrankheiten des Getreides. 2. Folge der "Urteile über Germisan." (Results of treatment with Germisan to combat bunt or stinking smut, and snow-mould in wheat and rye, stripe-disease and smut in barley, oat smut and other fungous diseases of cereals. Second series, "Opinions on Germisan.") Magdeburg, 32 p. 1921.

Saccharin-Fabrik, Magdeburg. Gebrauchsanweisung für die Saatbeize Germisan. (Directions for the use of Germisan.) Magdeburg, 4 p. 1922.

Burk. Versuche mit verschiedenen Beizmitteln zur Bekämpfung des Steinbrandes bei Weizen. (Experiments with various fungicides against bunt or stinking smut in wheat.) Mitt. Deut. Landw. Gesell. 37: 11-14. 1922.

Hiltner, L. Bericht über einen Beizversuch mit brandigem und gleichzeitig von Fusarium befallenem Winterweizen. (Notes on an experiment dealing with treatment of winter wheat infected with smut and Fusarium.) Prakt. Bl. Pflanzenbau u. Schutz, 10 (Ganzen Reihe 15): 26-31. 1912.

----- Eine Voranssage: Im heutigen Jahr wird die sogenannte Fusskrankheit des Getreides in stärkerem Masse auftreten. (A prediction: The so-called "foot-rot" of cereals will appear in abundance this year.) Prakt. Bl. Pflanzenbau u. Schutz, 10 (Ganzen Reihe 15): 37-45. 1912.

----- Prüfung verschiedener Stoffe auf ihre Verwendbarkeit als Saatgut. (Testing various fungicides for the treatment of seed.) Nachr. Bl. Deut. Pflanzenschutz Dienst Jahrg. 2, No. 5, p. 33-34. 1922.

----- Ueber die Beizung des Sommergetreides. (On the treatment of summer cereals.) Prakt. Bl. Pflanzenbau u. Schutz, 10 (Ganzen Reihe 15): 23-26. 1912.

Holmgaard, I. Undersøgelse vedrørende Saasaeds Sortsaegthed og Frihed for Brand og Stribesyge 1917-1920. (Investigations on the purity of strain and freedom from smut and stripe disease of seed.) Tidsskr. Planteavl. 27: 553-597. 1921.

Hori, Shotaro. Foot-rot (take-all) disease (Tachigara Byo) of barley, wheat, and rye. In Techn. Rep. Imp. Agr. Exp. Sta., Nishigahara, Japan, p. 35-65, 4 pl. 1901.

Lang, W. Beobachtungen über das Auftreten des Gelbrostes. (Observations relative to the occurrence of yellow rust.) Festschrift zur Feier des 100 Jährigenbestehens d. Würtemb. Landw. Anst. Hochschule Hohenheim, p. 84-101. Stuttgart. 1918.

Müller, H. C. and Molz, E. Ueber das Auftreten des Gelbrostes (*Puccinia glumarum*) an Weizen in den Jahren 1914 - 1916. (On the occurrence of yellow rust (*Puccinia glumarum*) upon wheat during the years 1914 to 1916) Fühling's Landw. Ztg., 66: 42-55. 1917.

Ravitscher, F. Zur Sexualität der Brandpilze, *Tilletia tritici*. (On the sexuality of smut fungi, *Tilletia tritici*.) Ber. Deut. Bot. Gesell., 32: 310-314. 1914.

Riehm, E. Ueber die Helminthosporien der Gerste. (On the Helminthosporia of barley.) Ber. Biol. Reichsanst. Land- u. Forstw. 1920. 16 (Mitt. 21): 43-45. 1921.

Schlumberger, O. Art und Grad der Schädigung beim Befall durch Roggenstengelbrand (Urocystis occulta). (Manner and extent of damage caused by Urocystis occulta.) Ber. Biol. Reichsanst. Land- u. Forstw., 1920. 15(Mitt. 21): 50-61. 1921.

Schmidt, O. Zur Kenntnis der durch Fusarien Hervorgebrachten Krankheitserscheinungen der Halmfrüchte. (Contributions to the knowledge of diseases of cereals caused by Fusarium species.) Fühling's Landw. Ztg. 66: 65-84. 1917.

Sydow, H. Die Verwertung der Verwandtschafts Verhältnisse und des gegenwärtigen Entwicklungsganges zur Umgrenzung der Gattungen bei den Uredineen. (The affinities and course of development as a means of defining the natural position of the genera of the Uredineae.) Ann. Mycol. 19: 161-175. 1921.

Verhoeven, W. N. L. Strepenziekte van de Gerst. (The stripe disease of barley.) Verslag en Meded. Plantenziekten Kundige Dienst. Wageningen, (Netherlands) no. 23, 18 p. 1921.

Wolff, Reinhold. Beitrag zur Kenntniss der Ustilagineen. (Contributions to the knowledge of the Ustilagineae.) Bot. Ztg., 31: 657-661, 673-677. 1783.

The above list of translations of foreign papers on cereals and cereal diseases supplements the lists found in the Cereal Courier, v. 13, p. 12-15, 52, 69, and 225-226, and v. 14, p. 38, 39, and 99-100. The translations are available in the library of the Bureau of Plant Industry.

SPECIAL MEMORANDUM

The attention of all leaders in the field is again called to Dr. Taylor's memorandum of August 2, 1922, given below:

The Act to provide additional compensation for certain civilian employees of the Government, commonly known as the Increased Compensation Act, differs this year from that of previous years in that a specific appropriation is made to each Department for this purpose. Also, the funds available for increased compensation are considerably less than have been expended each year in the past. Under the circumstances, in negotiating with prospective employees, no commitments providing for the increased compensation must be made without the prior approval of the Chief of Bureau. In general, certification for the increase of compensation will not be made for temporary employees and employees paid from emergency funds; new employees to be paid from lump funds should be employed at a rate of salary intended as full compensation. Special cases will be considered on their merits.

All now receiving the increased compensation will continue to do so, and the suggestions made in the foregoing paragraph are intended to apply to all new employees.

Very truly yours,

(Signed) Wm. A. Taylor

Chief of Bureau.

With this in mind extreme care must be exercised, in discussing salary with prospective employees, both clerical and non-clerical, not to promise the bonus as a part of the compensation. This also holds good in filling vacancies in positions which have previously carried the bonus.

PROJECT REPORTS

OAT INVESTIGATIONS

(T. R. Stanton, Agronomist in Charge)

Oat Variety Survey

The data on the oat varietal survey schedules sent out in 1919, in cooperation with the then Bureau of Crop Estimates, have been assembled in final form. The acreage of 37 varieties based on the 1919 Census figures has been determined. Of the oats reported, about 22 per cent has been classed as unnamed or varieties not identified. Twenty-six of the 37 varieties recognized as commercially important were grown on less than 1 per cent of the total oat acreage of the United States. The acreage of each of the remaining 11 varieties is shown in Table 1, together with the percentage of the total which each comprises.

Table 1.- Acreage and percentage of all oat acreage of the 11 leading varieties of oats grown in the United States in 1919.

<u>Variety</u>	<u>Acres</u>	<u>Percentage of total acreage</u>
Silvermine	6,304,002	16.59
Red Rustproof	6,015,204	15.83
Swedish Select	3,631,789	9.56
Morrison	3,349,567	8.82
Green Russian	2,227,745	5.86
White Russian	2,224,657	5.86
Albion (Iowa No. 103)	1,498,816	3.95
Early Champion	677,172	1.78
Burt	499,719	1.32
Richland (Iowa No. 105)	410,632	1.08
Lincoln	395,759	1.03

CEREAL COURIER

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Vol. 15

February 15, 1923.

No. 3

Personnel (Feb. 1-15) and Field Station (Jan. 1-31) Issue.

PERSONNEL ITEMS

F. A. Coffman, assistant agronomist in charge of cereal experiments at the Akron Field Station, Akron, Ohio., who has been in Washington since November, gave an illustrated talk on the cereal crop experiments at Akron before the seminar of the Office held February 8 in the assembly room of the Bieber Building.

Allan D. Dickson has been appointed assistant in barberry eradication to assist in the chemical investigations in connection with barberry eradication that are being conducted in cooperation with the University of Wisconsin, at Madison, under the direction of Noel F. Thompson.

A. C. Dillman, agronomist in charge of flax investigations, attended a meeting of the Flax Development Committee of the American Paint, Oil, and Varnish Association, at University Farm, St. Paul, Minn., on February 9. Before returning to Washington he expected to confer with officials of the Minnesota Agricultural Experiment Station regarding flax production during the coming season.

Donald G. Fletcher, junior plant pathologist, after spending several weeks in Washington familiarizing himself with the Office methods of promoting barberry eradication, left February 8 for Minneapolis to resume collaboration with the Conference for the Prevention of Grain Rust. N. R. Carmichael, assistant pathologist, who has been in Minneapolis during the same period, returned to Washington February 12 to assist Doctor Kempton in the barberry eradication at the Washington headquarters.

James B. Harrington, agent in cereal investigations, since October 2, 1922, completed his field duties February 1, on which date his appointment was terminated.

Frederick D. Richey, agronomist in charge of corn-breeding and cultural investigations, returned February 7 from Hudson Heights, Quebec.

D. E. Stephens, superintendent of the Sherman County Branch Station, Moro, Oreg., talked before the seminar of the Office on February 4. He summarized the results of the cereal experiments, particularly those with wheat, and discussed briefly the climate and soils of the Columbia Basin of Oregon and the soil moisture conditions at the Sherman County Branch Station.

Extensive varietal experiments at Moro and cooperative experiments with farmers have shown that wheats of the hard winter group, like Turkey and Kharkov, are best adapted for fall sowing on the drier soils and that Hybrid 128, a white-kerneled club wheat, is the best variety for the heavier soils of eastern Oregon or locations of greater precipitation.

Two valuable spring wheat varieties, Federation and Hard Federation, introduced by this Department from Australia, have demonstrated their superior yield in the varietal experiments at Moro. The results obtained by farmers with these varieties from seed distributed from Moro indicate that they probably will replace all other spring wheats in eastern Oregon. They also have shown much promise in other States, notably in southern Idaho under irrigation, and in western Montana under irrigation and on dry land.

A number of smut-immune and highly smut-resistant winter wheats have been produced at the Branch Station at Moro, whose value for breeding purposes and for growing in commercial quantities is practically assured.

VISITORS

Takatsugu Abiko, agronomist of the Hokkaido Agricultural Experiment Station, Sapporo, Japan, was an Office visitor Monday, February 12, for the purpose of obtaining information regarding experiments in cereal production and breeding. Mr. Abiko has visited a number of European countries on his present trip and plans to stop at several of the experiment stations in the United States, where important plant breeding experiments are under way, before he returns to Japan.

L. C. Lin, a young Chinese, who has been studying agriculture at the Iowa State College during the past two years, was an Office visitor Tuesday, February 13, for the purpose of obtaining varieties of cereals suitable for experimentation in China. He plans to return to China soon to teach agriculture and conduct agricultural experiments under the auspices of the Methodist board of foreign missions.

MANUSCRIPTS AND PUBLICATIONS

Permission has been granted for the publication in the Proceedings of the Indiana Academy of Sciences of a paper by K. E. Basson, entitled "Relation of Barberries to Stem Rust of Wheat. Results of Indiana Survey."

Galley proof of article entitled "Production and Dispersal of Conidia in the Philippine Sclerosporas of Maize," by Dr. W. H. Weston, Jr., for publication in the Journal of Agricultural Research, was read February 2.

Galley proof of article entitled "Early Vigor in Maize Plants and Yield of Grain as Influenced by the Corn Root, Stalk, and Ear Rot Diseases," by James R. Holbert, E. L. Burlison, H. Howard Bissar, Benjamin Koshler, George H. Dungan, and Merle T. Jenkins, scheduled for publication in the Journal of Agricultural Research, was read February 3.

Galley proof of the paper entitled "The Water Content of Barley during Growth and Maturation," by Harry V. Harlan and Merritt N. Pope, to be published in the Journal of Agricultural Research, was read February 6.

Second page proof of the revised edition of Farmers' Bulletin 1058, entitled "Destroy the Common Barberry," by E. C. Stakman, was read February 5.

Farmers' Bulletin 1305, entitled "The Soft Red Winter Wheats," by Clyde E. Leighty and John H. Martin, was received from the Government Printing Office February 6.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R.R. Childs)
No report).

SOUTH CAROLINA

Pee Dee Substation, Florence (J. M. Hammerly) (No report)

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor) (No report)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love)
(Feb. 1) The statistical measurements on the pure-line material in the oat selection studies have already been made and we are ready to make selections for the continuance of this work another year.

The greenhouse plantings are doing remarkably well and some very interesting plant types are showing up in connection with our hybrids. The material for the making of further hybrids is growing well and it appears that we shall be able to make a rather extensive series of hybrids in the spring.

The men are busy now cleaning oats and barley and getting the seed out for spring seeding. The oat nursery will be very large, as it will include a large series of the new hybrids between Cornellian and a number of our best white selections, many of which last year proved to be very superior as regards yield.

During Farmers' Week, February 12 to 17, we expect to organize a New York State seed growers' association, a number of the members of which will be men who are specializing in the multiplication and distribution of our new types of small grains.

Visitors to the department include Mr. Geo. J. Wilds of the Pedigreed Seed Company, Hartsville, S.C. and Prof. J. H. Parker of Manhattan, Kans. Both spent about a week with us in consultation regarding the work. Each planned to continue his work for the degree of Ph.D., and in conference the thesis problem for each was planned, both to be on oat work.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (No report)

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (Jan. 17)

The present winter has been one of the mildest on record in Missouri, and during the last two weeks we have been having typical April weather. Wheat is in excellent shape all over the state. The area seeded was estimated at 3,152,000 acres, a slight decrease from that of the two preceding seasons. Somewhat less fertilizer was used than in the preceding seasons, but the present prospect is much better than usual. Very little fly infestation has been reported.

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (No report)

IOWA

Agricultural Experiment Station, Ames (L. C. Burnett) (No report)

Iowa State College, Ames (Barberry Eradication, J. H. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (Feb. 1) On January 9, 10, 24, and 25 members of the Cereal Office staff conferred with members of the Illinois Agricultural Experiment Station concerning manuscripts now in process of preparation. Similar conferences were held at Bloomington, January 15 and 19.

Mr. Holbert and Mr. Koehler attended the annual meeting of the Illinois Seed Corn Breeders Association at Urbana January 25. Mr. Koehler was elected an associate member of the organization upon nomination by Dr. Burlison.

The new germination laboratory that has been installed is proving satisfactory in every respect. We are planning to conduct most of our germination tests during February and March.

Histological studies on roots of different pure-line strains of corn are being conducted in the laboratories of Illinois Wesleyan University.

Galley proof of the manuscript of "Early Vigor of Maize Plants and Yield of Grain as Influenced by the Corn Root, Stalk, and Ear Rot Diseases" was read January 30 and 31.

Post Office Building, Urbana (Barberry Eradication, G. C. Curran) (No report)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer) (No report)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (No report)

Purdue University, College of Agriculture (Barberry Eradication, V. E. Beeson) (No report).

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, John W. Baringer) (No report)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) (No report)

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, William A. Walker) (No report).

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (No report)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger) (No report)

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker) (No report)

Hays Branch Experiment Station, Hays (B. B. Dayles) (No report)

COLORADO

Akron Experiment Farm, Akron (F. A. Coffman) (No report)

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren) (No report)

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication) (No report)

WYOMING

Cheyenne Experiment Farm, Archer (A. L. Nelson) (Feb. 3) An examination of winter wheat at this station reveals that this crop is in fair condition. That seeded on fallow has suffered some from soil blowing but no serious damage has yet resulted. That sown with the disk furrow drill presents the better condition. Seedlings which did not germinate during the fall have produced strong sprouts. This presages a good outlook for winter cereals for the coming harvest. The factors which brought about this condition are the heavy snow of November 4 and the warm weather during January.

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter) (No report)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Hutton)
(No report)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)
(No report)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, Geo. C. Mayoue) (No report)

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.)
(No report)

Dickinson Substation, Dickinson (Ralph W. Smith) (No report)

MONTANA

Judith Basin Substation, Missoula (Ralph W. May) (No report)

State College of Agriculture, Bozeman (Barberry Eradication, W. N. Christopher) (No report)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (A. E. McClymonds) (No report)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (No report)

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones) (No report)

University Farm, Davis (V. H. Florell) (No report)

Agricultural Experiment Station, Berkeley (Fred W. Briggs) (No report)

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)



Vol. 15

February 23, 1923.
Personnel (Feb. 16-23) and Project Issue

No. -

PERSONNEL ITEMS.

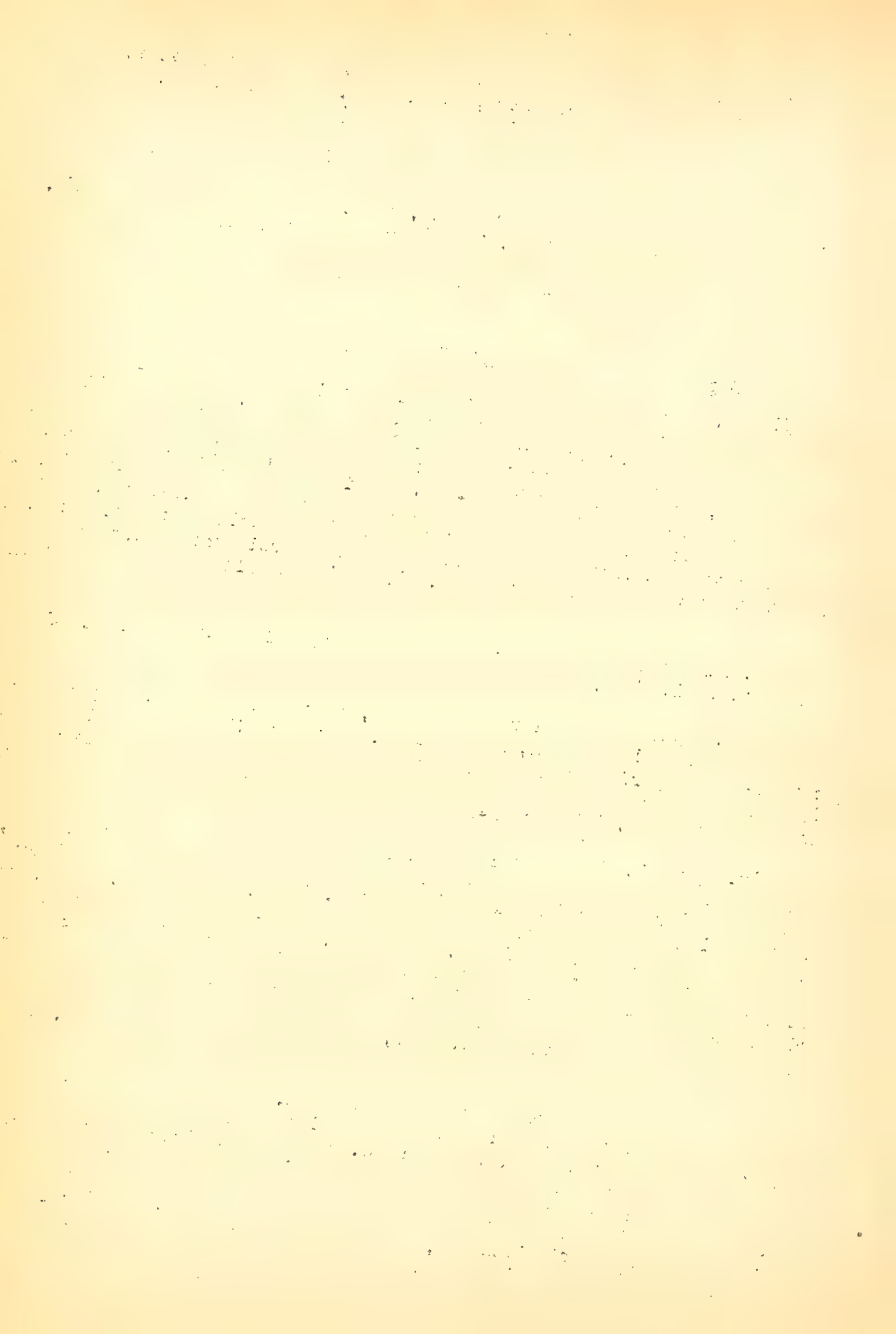
Claf S. Aamodt, assistant pathologist, talked before the Office seminar February 15 on the subject of "Breeding and Selection for Stem Rust Resistance in Wheat." He reviewed briefly the work done in breeding for rust resistance in wheat previous to the discovery, in 1917, of the biologic forms, by Stakman and Pieneisel. He indicated the necessity of changing the method of attack and the possibilities of synthetically producing a variety of common wheat resistant to all of the biologic forms. Mr. Aamodt discussed the genetics of rust resistance in several crosses already studied and summarized the progress to date. His talk was illustrated by lantern slides.

Mr. Aamodt left Washington February 27 for his headquarters at University Farm, St. Paul, Minn.

F. A. Coffman, assistant agronomist, in charge of cereal experiments at the Akron Field Station, Akron, Colo., gave an illustrated talk on the cereal-crop experiments at Akron, before the Office seminar February 3. Mr. Coffman, who has been in Washington since November, returned to his headquarters at Akron, February 24.

Dr. Harry W. Harlan, agronomist in charge of barley investigations, left Washington February 26, preparatory to sailing from New York February 28, on the "President Van Buren," of the U. S. Shipping Board. He expects to reach London about March 10. In Europe he will make the necessary arrangements for visiting India, Abyssinia, and north Africa, where he will spend the better part of a year collecting seed of barleys and other grains of interest to investigators of the Department. It is hoped in this way to obtain superior breeding stocks, especially with reference to resistance to unfavorable environmental conditions, such as temperature, drought, and fungous diseases.

Doctor Harlan plans to travel in Algeria, the chief center of barley production in northern Africa, during the latter half of the month of March and the first part of April. He probably will visit Morocco also before proceeding to Egypt about the middle of April to search for varieties of barley in the region of Lake Mariout, whence already have come two varieties very promising on the Pacific Coast at the present time. Barley culture in Egypt is as old as civilization, and it is believed that further search by a specialist will be well repaid.



The months of May, June, and July will be spent in India, from which have come practically all the varieties of hull-less barley now grown in the United States. Many other and quite probably better forms of this important group of barleys may be found in the higher valleys of India, where barley culture is very old and highly localized.

New forms of cultivated barley are being developed from time to time by plant breeders in western Europe, and a study of the material in the breeding stations of France, Sweden, Germany, and Austria will be of great assistance to an investigator who possesses, as does Doctor Harlan, a wide knowledge of genetics and of the material necessary as breeding stock to obtain certain desired results in the United States.

The barley harvest in Abyssinia lasts from October until January and during this period Doctor Harlan expects to visit the many and diverse producing districts of that country, from the lowlands to the higher elevations, in the hope of obtaining interesting forms not only of barley but of wheat and other cereals. Some very striking forms of barley already have been found in Abyssinia, as well as peculiar forms of wheat and grain sorghums.

A farewell dinner was given to Doctor Harlan by thirty of his associates in the Bureau of Plant Industry, at the Washington City Club, February 23. After the dinner brief remarks were made by Dr. W. A. Taylor, Chief of the Bureau, Dr. K. F. Kellerman, Associate Chief, Dr. W. T. Swingle, Dr. R. A. Oakley, Dr. H. D. Humphrey, Wilson Popenoe, C. W. Harburton, F. D. Richey, and Doctor Harlan. Dr. Carleton R. Ball, Cerealists, presided and introduced the speakers.

Dr. A. G. Johnson, pathologist in charge of the investigations of diseases of cereals caused by imperfect and sac fungi, returned February 27 from an extended trip in Wisconsin, Illinois, and Indiana, conferring with collaborators in cereal disease investigations and arranging with field assistants for prospective manuscripts.

C. H. Kyle, agronomist in corn investigations, left Washington February 21 to supervise the planting of corn in cooperative experiments on the agricultural experiment stations at Baton Rouge, La., and Knoxville, Tenn., and to confer with the cooperating officials regarding details of the experiments. Mr. Kyle was accompanied by Hugo Stoneberg, assistant agronomist, who will remain for some time at Baton Rouge to assist in the planting, cultivation, hand pollination, and other necessary work in connection with the experiments.

D. E. Stephens, superintendent of the Sherman County Branch Station, More, Oreg., left for his headquarters February 22, after spending six weeks in the Office.

VISITORS

Charles H. Clark, formerly agronomist in charge of the investigations of flax, and now representing an Indiana seed firm, visited the Office February 26.

Karl H. Townsend, formerly a member of the clerical staff of the Office, and now a plant quarantine inspector in the Houston office of the Federal Horticultural Board, was an Office visitor February 24.

AGRICULTURAL APPROPRIATIONS FOR THE FISCAL YEAR 1924.

The Agricultural Appropriation Act, for the fiscal year beginning July 1, 1923, was signed by the President February 26. The item in this Act directly concerned with the activities of the Office of Cereal Investigations reads as follows: "For the investigation and improvement of cereals, including corn, and methods of cereal production, and for the study and control of cereal diseases, including barberry eradication, and for the investigation of the cultivation and breeding of flax for seed purposes, including a study of flax diseases, and for the investigation and improvement of broom corn and methods of broom-corn production, \$697,505:

PROVIDED, That \$425,000 shall be set aside for the location and destruction of the barberry bushes and other vegetation from which rust spores originate; PROVIDED further, That \$125,000 of this amount shall be available for expenditure only when an equal amount shall have been appropriated, subscribed, or contributed by States, counties, or local authorities, or by individuals, or organizations for the accomplishment of such purposes.

MANUSCRIPTS AND PUBLICATIONS.

Two manuscripts entitled, respectively, "Kill the Common Barberry with Chemicals," by N. F. Thompson, and "Barberry Eradication Prevents Black Rust in Western Europe," by E. C. Stalmar, were transmitted February 14 for publication as Department Circulars.

Galley proof of the paper entitled "Experiments with Hot Water, Formaldehyde, Copper Carbonate, and Chlorophol for the Control of Barley Smuts," by T. H. Tisdale, J. W. Taylor, and Marion A. Griffiths, for publication in *Phytopathology*, was read February 17.

Galley proof of the paper entitled "Investigations of the Rosette Disease of Wheat and Its Control," by Harold H. McKinney, for publication in the *Journal of Agricultural Research*, was read February 19.

Galley proof of Department Bulletin 1137, entitled "Symptoms of Wheat Rosette Compared with Those Produced by Certain Insects," by Harold H. McKinney and Walter H. Larrimer, was read February 21.

Page proof of the paper entitled "Production and Dispersal of Conidia in the Philippine Sclerosperas of Maize," by Dr. T. H. Weston, Jr., for publication in the *Journal of Agricultural Research*, was read February 17.

Page proof of the paper entitled "Water Content of Barley Kernels during Growth and Maturation," by Harry V. Harlan and Lerritt N. Pore, for publication in the *Journal of Agricultural Research*, was read February 20.

The paper entitled "A Bacterial Disease of Brome-Grass," by Charles S. Reddy and James Godkin, was published in *Phytopathology*, v. 13, no. 2, p. 74-88. February, 1923.

The paper entitled "Many-Necked Dwarf Barley," by Harry H. Harlan and Merritt N. Pons, was published in the Journal of Heredity, v. 13, no. 6, p. 269-273, June, 1922, (Date of Issue February 15, 1923).

The paper entitled "A Cytological Study of Infection of Baart and Kanred Wheats by Puccinia graminis tritici," by Ruth F. Allen, was published in The Journal of Agricultural Research, v. 23, no. 3, p. 131-151, January 20, 1923. This issue of the Journal was received February 26.

PROJECT REPORTS

CEREAL DISEASE INVESTIGATIONS

(Dr. H. B. Humphrey, Pathologist in Charge)

Cereal Smut Investigations, (Dr. W. H. Tisdale, Pathologist in Charge)

Cooperative Cereal Smut Investigations, Manhattan, Kans.

By - L. E. Melchers and C. O. Johnston.

Corn Smut

About 200 rows representing selfed lines of Kansas Pride of Saline, Commercial White and Kansas Sunflower Corn were grown at the Kansas Agricultural Experiment Station, Manhattan, Kans, in 1922. Some of the strains have been selfed two seasons. Detailed studies are being made of the behavior of the various selfed lines in respect to corn smut and corn root rot. Besides these, selections from Indiana, Washington, D. C., and Connecticut have also been grown. Studies are also being made of the behavior of certain selfed lines of Kansas corn in these different localities, particularly to note their behavior towards smut. It is hoped in this way to obtain more definite knowledge of the behavior of different selections under different environmental conditions. Strains of corn grown at Manhattan showed a variation of smut infection from 0 to 60 per cent. Promising results are apparently being obtained in some of these lines. Rather extensive studies are being made of corn smut cultures secured from different sections of the United States, special emphasis being given to their virulence.

Some work on corn root rot and smut has been begun at Colby, Kans., where Bloody Butcher is being used. Professor Parker reported some differences with respect to root rot in some of the lines. Considerable attention will be given to their behavior to corn smut this coming season, as corn smut is somewhat more prevalent in central and western Kansas. Practically no difference up to date has been observed in seed which was treated with mercuric bichloride before planting.

Wheat Smut Investigations

During 1922 about thirty varieties of winter wheat were grown in the bunt nursery. These were inoculated with Tilletia levis and were sown on three different dates. Marked differences were noted in the behavior of varieties. Only slight infection occurred on seedlings up to October 20. The maximum infection occurred in the October 27 sowing; after this date there was a rapid dropping off. There seems to be little indication that the bunt spores live over summer in the soil in eastern Kansas, particularly when rains occur in July and August. There is some question, however, as to whether they cannot summer over in central and western Kansas. Results obtained in 1922 with various fungicidal treatments are shown in the following table.

Data on seed treatments for control of stinking smut of wheat, 1922.

		:1st sow-	:2d sow-	:3d sow-	:				
		:ing 10/5	:ing 10/12	:ing 10/13	: Average.				
Row:	Treatment	:Laboratory	:Laboratory	:Laboratory	:Lab.				
No.:		:germ.:	Smut:	germ.:	Smut:	germ.:	Smut:	Germ:	Smut
		:infection	:infection	:infection	:Infection				
		: %	: %	: %	: %	: %	: %	: %	: %
1	:Guard, not smutted, not treated	:79.0	:0.5	:75.5	:0	:81.5	:12.2	:78.6	:4.2
2	:Check, smutted, not treated	:74.0	:6.3	:83.5	:5.4	:80.5	:3.7	:79.3	:7.2
3	:Smutted, dry CuSO ₄ dust, all that will stick	:80.0	:0	:84.0	:0	:74.0	:.2	:79.3	:.1
4	:Smutted, dry CuSO ₄ and hydrated lime, half and half	:77.4	:.6	:85.5	:4.3	:83.0	:2.0	:81.9	:2.3
5	:Check, smutted, not treated	:74.0	:3.9	:83.5	:5.6	:80.5	:16.5	:79.3	:8.6
6	:Smutted, dry CuCO ₃ dust	:73.5	:0	:78.9	:0	:80.0	:0	:79.1	:0
7	:Smutted, dry CuCO ₃ and hydrated lime, half and half	:80.5	:0	:80.5	:0	:84.3	:.4	:81.7	:.1
8	:Soil smutted, dry CuSO ₄	:77.5	:.3	:68.0	:.3	:72.0	:.3	:72.5	:.3
9	:Soil smutted, dry CuCO ₃	:65.0	:.4	:79.4	:3.8	:82.5	:0	:75.6	:1.4
10	:Check, smutted, not treated	:74.0	:4.3	:83.5	:8.2	:80.5	:12.9	:79.3	:8.5
11	:Smutted, dry commercial bordeaux:	:79.5	:7.7	:85.0	:10.0	:70.0	:13.3	:78.1	:10.3
12	:Smutted, 1-25 CuSO ₄ sol. soaked :12 hrs.milk of lime 1-10, 10 min:	:65.5	:0	:74.1	:0	:73.5	:0	:70.3	:0
13	:Smutted, 1-4 CuSO ₄ sol. 3 minutes:	:37.5	:0	:55.0	:0	:51.3	:0	:47.9	:0
14	:Smutted, 1-40 formaldehyde 15 min: :plunged in 1-10 milk of lime, 10m:	:72.5	:0	:70.5	:0	:73.5	:.3	:74.5	:.1
15	:Check, smutted, not treated	:74.0	:4.3	:83.5	:8.2	:80.5	:12.9	:79.3	:8.5
16	:Smutted, 1-40 formaldehyde, 15 min:	:44.3	:0	:59.0	:0	:63.5	:.6	:57.3	:.2
17	:Smutted, presoak 6 hrs. 1-40 formal. : 15 min. covered 6 hrs.	:65.0	:.1	:75.0	:1.9	:75.0	:0	:73.1	:1.8
18	:Smutted, presoak 6 hrs., 1-40 formal.	:63.5	:0	:74.5	:0	:55.0	:0	:64.3	:0

19:Smutted, dry formaldehyde 0.3 cc :42.0:0 :51.0:0 :48.5:1.2 :47.1: .4
:per pint seed, covered, 6 hrs.

20:Check, smutted, not treated :74.0:5.6:83.5:4.4:80.5:12.5:79.3:6.8

21:Smutted, dry formaldehyde 0.3 pp :
per pint seed, covered 12 hrs. :33.5:0 :53.0:0 :73.0: 1.0:53.1: .3

22 :Smutted, Chlorophol, 0.3 gm.-100
cc H₂O soaked 1 hr. :71.0:0 :75.5:0 :79.0: .5:75.6: .2

**23:Check, smutted, not treated :74.0:4.3:83.5:3.2:80.5:11.8:79.3:6.4

24 :Guard, not smutted, not treated :79.0: .7:75.5:0 :81.5:0 :78.6: .7

* This seed covered 18 hours through error.

** This row omitted in Oct. 5 planting through error.

Smut for contamination, Tilletia levis, from F. A. Coffman, Akron, Colo.

All seed was good quality Kanred from 1921 crop at the Agronomy farm.

The bottoms of the rows were thoroughly wet before the seed was sown.

The series sown on Oct. 19 was the most vigorous and had best general appearance thru the winter.

All rows headed at about the same time, the average date fully headed being about June 8.

All treatments can be said to have given control with the exception of dry commercial Bordeaux mixture, which gave none.

An extensive bunt nursery containing about ninety varieties has been sown again this year. For the 1923 nursery both Tilletia levis and T. tritici have been used for inoculation. The wheat was sown October 16 and 17.

Sorghum Smut Investigations

A few varieties of sorghum were again artificially inoculated so as to obtain results of the behavior to the kernel smut. No large sorghum smut nursery is being grown at the present time in view of the fact that this phase of investigation has been practically concluded after six years of work at Manhattan, Amarillo, Texas, Columbia, Mo., Washington, D. C., and Brooklyn, N. Y. A manuscript by Reed and Melchers entitled, "Varietal Resistance of Sorghums to Smuts" is now in preparation. Only such varieties as are new or of special interest have been grown in the smut nursery. The results obtained this year are as follows:

Data on varietal experiment with sorghums to determine resistance to Kernel smut, 1922.

Row No.	Variety	: % : Row No. :	Variety	: % : Row No. :	Smut
1	:Blackhull kafir	:38.1:10	:Standard Yellow milo	**	: 0
2	:Spur Feterita	: 0 :11	:Progressive kafir	**	: 0
3	:Red Amber sorgo	:25.9:12	:Dwarf White milo	**	: 0
4	:Dwarf Hegari	: 0 :13	:Feterita		:33.5
5	:Black Amber sorgo	: 8.0:14	:Dwarf Yellow milo	**	:
6	:Standard White milo	: 0 :15	:Darso C.I.No. 615	*	:
7	:Shrock sorghum	:35.7:16	:Darso C.I.No. 545	*	:
8	:Feterita C.I. No. 732	: 0 :17	:Freed sorghum	*	:
9	:Dawn kafir	:60.0:18	:Sudan corn	**	:
		: :19	:Gooseneck sorgo	**	:

* Injured by chinch bugs.

** Killed by chinch bugs.



Oat Smut

In 1922, about 100 selections of Burt, Kanota, and Red Rust proof oats were artificially inoculated with smut and sown. These selections for the most part have been carried thru three seasons of artificial inoculation without sign of smut infection. Some of the selections of the Burt oat undoubtedly are showing resistance and are promising from this standpoint. This project has been conducted cooperatively between the departments of Botany and Plant Pathology and Agronomy.

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15

March 15, 1923

No. 5

Personnel (March 1-15) and Field Station (Feb. 1-25) Issue.

DATE OF ISSUANCE OF CEREAL COURIER.

Beginning with the issue of April 10, the Cereal Courier will appear three times a month, namely, on the 10th, 20th, and last day of the month. It will be greatly appreciated if, beginning April 1, until further notice, all agronomic and pathologic field stations will mail reports promptly on the 15th and last days of the month.

PERSONNEL ITEMS.

Joseph A. Bourke, skilled laborer was transferred from the U. S. Veterans' Bureau, effective March 3, to take the place of John W. Heshaw, on leave without pay because of continued illness.

Dr. F. E. Kempton, pathologist in charge of barberry eradication, summarized the results of the eradication campaign conducted during the past five years, in an illustrated talk before the seminar of the Office, March 1. A review was given of the publicity of the entire campaign as conducted co-operatively by this Office, the Conference for the Prevention of Grain Rust, and the 15 northcentral grain-growing States. The system of survey and re-survey was described, the various methods used in eradication were illustrated, and the proposed plan for treating bushes with chemicals was outlined.

C. H. Hyle, agronomist in corn investigations, returned March 11 from an inspection of the cooperative corn experiments at Baton Rouge, La., and Knoxville, Tenn. He reports that continuous rains interfered somewhat with planting operations at Baton Rouge.

Malcolm F. Milroy was appointed March 14 as temporary assistant at Arlington Farm to take notes and help in seed treatment in connection with smut investigations.

J. Halford Easler, assistant plant pathologist and part-time employee of this Office in the investigation of stripe rust of cereals, in cooperation with the Idaho Agricultural Experiment Station, at Moscow, has been granted permission to pursue graduate study at the University of Idaho, looking toward the degree of Doctor of Philosophy.

It is regretted that the name of Er. H. L. Shantz, physiologist in charge of Plant Physiological and Fermentation Investigations, was inadvertently omitted from the list of speakers at the dinner given February 23 in honor of Dr. Harry V. Harlan, who sailed February 23 for a year of agricultural exploration in Africa and Asia.

F. H. Tarnstrom, unskilled laborer, who has been assisting in the co-operative cereal breeding investigations, under the direction of John E. Parker, at Manhattan, Kans., resigned February 23.

MANUSCRIPTS AND PUBLICATIONS.

A manuscript entitled "Flag Smut of Wheat," by W. H. Tisdale, G. H. Dungan, and C. E. Leighty, was transmitted March 6 for publication as a Department Circular.

A manuscript entitled "Knot Wheat," by J. Allen Clark and L. R. Waldron, was transmitted March 7 for publication as a Department Circular.

A manuscript entitled "Experiments with Emmer, Spelt, and Einkorn," by John H. Martin and Clyde E. Leighty, was transmitted March 7 for publication as a professional paper of the Department Bulletin series.

A manuscript entitled "A Bacterial Stripe Disease of Proso Millet," by Dr. Charlotte Elliott, of the Laboratory of Plant Pathology, in cooperation with the Office of Cereal Investigations, was submitted March 13 for publication in the Journal of Agricultural Research.

Galley proof of paper entitled "Flag Smut of Wheat with Special Reference to Varietal Resistance," by W. H. Tisdale, G. H. Dungan, and C. E. Leighty, to be published as a bulletin by the Illinois Agricultural Experiment Station, was read March 3.

Galley proof of Department Circular 23, entitled "Kill the Common Barberry with Chemicals," by Noel F. Thompson, was read March 12.

Page proof of article entitled "Early Vigor of Maize Plants and Yield of Grain as Influenced by the Corn Root, Stalk, and Ear Rot Diseases," by James R. Holbert, W. L. Burlison, Howard H. Bizzar, Benjamin Kochler, George H. Dungan, and Marle T. Jenkins, for publication in the Journal of Agricultural Research, was read March 3.

Page proof of Department Bulletin 1137, entitled "Symptoms of Wheat Rosette Compared with those Produced by Certain Insects," by H. H. McKinney and Walter H. Larrimer, was read March 8.

The paper entitled "The Use and Value of Back-Crosses in Small-Grain Breeding," by Harry V. Harlan and Herriott N. Pope, was published in The Journal of Heredity, v. 13, no. 7, p. 315-322. July, 1922. Date of issue of this number, March 10, 1923.

The paper entitled "Production and Dispersal of Conidia in the Philippine Sclerosporae of Maize," by William H. Weston, Jr., was published in The Journal of Agricultural Research, v. 23, no. 4, p. 239-270, 10 pl., 2 fig. January 27, 1923. Reprint of this paper was received March 14, 1923.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R. R. Chills)
(No report)

SOUTH CAROLINA

Pee Dee Substation, Florence (J. M. Hammerly) (No report)

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor) (March 14) There has been a little winterkilling in the cereal crops this year. Even the fall-sown spring barley used in the stripe and nob-blotch seed treatment experiment has so far escaped without appreciable reduction in stands. Some heaving, particularly in the spaced nursery rows, has been observed, but the damage has not been serious. Barley has recently made excellent growth, the stands having greatly improved since December. In sections of the barley varietal plots, fennel, chickweed and other weeds have started, but little trouble is expected from any of these except fennel.

Oats continue to show winter injury to the more exposed leaves, but the plants appear to be in good condition. Wheat and rye are vigorous and not prematurely advanced in growth.

Many F_1 hybrids of varietal or inter-species crosses of some of the cereals are maturing in the greenhouse. Owing to early seeding, the plants are maturing earlier than usual.

The maximum and minimum temperatures and the total precipitation for January and February were as follows:

	Max.	Min.	Precipitation (inches)
January	64	20	3.94
February	60	12	2.42

NEW YORK

Cornell University Experiment Station, Ithaca (T. T. Craig for H. H. Love) (Feb. 23) February has been very cold, the minimum temperature being 15° below zero. The ground has been well covered with snow, however, so that so far wheat probably has come thru the winter in good shape.

Farmers' Week was held here from February 12th to 17, and while the attendance was somewhat smaller than that of last year the interest shown in the lectures and exhibits was very good. The organization of a seed growers' association was completed at this meeting. Those who are growing pure seeds of wheat, oats, barley, potatoes, and timothy may now have the advantage of proper inspection and certification.

A list of seed growers whose crops had been inspected by the Plant Breeding Department, with the quantity of seed available for sale, was given out during Farmers' Week. Judging from the number of requests for this list and the interest shown in the exhibits of wheat, oats, and barley recommended by this department, there will be a ready sale for the seeds listed. The quantity of each of our new strains of oats for sale by members of the Seed Growers' Association is as follows: Cornellian, 5,000 bushels; Empire, 4,000 bushels; Standwell, 3,500 bushels; Comewell, 1,000 bushels. More interest was shown in the Cornellian oat than in any other of our new strains, owing to its remarkable yield. During the past five years, it has outyielded its nearest competitor by about 9 bushels per acre. One objection to the Cornellian oat is that it has some gray color, the palea especially being rather dark. To overcome this objection several crosses were made some years ago between this oat and some of our best yielding white-horneled sorts. The white-horneled plants in the progeny have been selected and tested for yield. Last year, a large number of these selections were grown in rod rows, and many of the very promising sorts will be given a more thoro test this year.

The work of getting our oat and barley seed ready for the spring sowing is now well under way.

Franklin A. Coffman visited the department February 25, en route from Washington to Akron, Colo.

Dr. H. H. Love left on February 25 for Urbana, Ill., to give a series of lectures before the staff of the Illinois Agricultural Experiment Station on the application of biometrical methods to experimental problems.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (No report)

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (No report)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (No report)

IOWA

Agricultural Experiment Station, Ames (L. C. Burnett) (No report)

Iowa State College, Ames (Darberry Fradette, J. E. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (Feb. 1) Dr. W. L. Durlison spent February 13 at Bloomington in conference regarding manuscripts.

Dr. A. G. Johnson was in Bloomington, February 17-20 for a similar purpose and for consultation regarding plans for the coming season.

Mr. Holbert and Mr. Koehler are attending the lectures by Dr. H. H. Love before the Agronomy Department staff at Urbana, February 27 to March 2.

C. O. Johnston, of the Kansas State Agricultural College, was an office visitor February 19.

Post Office Building, Urbana (Barberry Eradication, Edwin D. Griffin for G. C. Curran) (March 5) During the week of February 20 Lee County was visited and an inspection was made of a number of properties in the vicinity of Dixon, where barberry had been found last summer but had not been reported removed. In general the owners of property on which barberry has been found cooperate very well and few bushes remain in the territory surveyed. Material is being prepared for a publicity campaign which will precede the summer field work.

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer) (No report)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (No report)

Purdue University, College of Agriculture (Barberry Eradication, K. E. Deeson) (No report)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, John W. Baringer) (No report)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Roddy) (No report)

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, William A. Walker) (No report)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (February report) During the month of February, emphasis was placed on laying plans for the spring and summer work. One of the main features was the conductin of a Barberry School of Instruction. This school was open to all who desired to attend. It was made clear at the beginning that this course was primarily for those who desired to apply for positions in the barberry eradication campaign next summer, but that anyone who desired could attend.

The subjects covered were those which deal with problems confronting field men in the survey for common barberries. The candidates for appointment will be examined at the end of the course. We have had an average attendance of thirty-five at each meeting.

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report).

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinzer) (No report)

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker) (No report)

Hays Branch Experiment Station, Hays (D. D. Bayles) (No report)

COLORADO

Akron Experiment Farm, Akron (F. A. Coffman) (No report)

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)
(No report)

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication)
(No report.)

WYOMING

Cheyenne Experiment Farm, Archer (A. L. Nelson) (No report)

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter) (No report)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Hutton)
(No report)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)
(No report)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, Geo. C. Mayoue) (No report)

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.)
(No report)

Dickinson Substation, Dickinson (Ralph W. Smith) (February report) The month of February has been severely cold with the exception of the last week. The mean temperature for the month was about 7 degrees, which is about 5 degrees below the normal mean for the month. One of the worst blizzards ever known here occurred on February 13. On that day the temperature ranged from 17 below zero to 22 below, and the wind velocity averaged 27½ miles per hour for 24 hours. At the height of the storm the velocity must have been at least 40 miles per hour. Comparatively little snow fell but the air was filled with the loose snow already on the ground which was blown for miles. The storm was unusual for the extremely low temperature, as most of the Dakota blizzards occur at temperatures considerably above zero.

During the past week the snow has melted rapidly and now the ground is practically bare except for the drifts. Sleighing has been fairly good all winter and farmers have marketed large quantities of wheat. The roads are now very muddy and nearly impassable for loaded vehicles.

MONTANA

Judith Basin Substation, Missoula (Ralph W. May) (No report)

State College of Agriculture, Bozeman (Barbary Iradication, W. M. Christopher) (No report)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (A. E. McClymonds) (No report)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (No report)

CALIFORNIA

Davis Rice Field Station, Davis, (J. W. Jones) (No report)

University Farm, Davis (V. H. Florell) (March 2) I visited Davis last Saturday and found the cereal experiments in good condition. There has been no rain for the last ten days or two weeks, and the weather has been very warm and springlike for the last few days.

The cereals are making a vigorous growth, while the earlier spring varieties in some cases are beginning to joint. The spreading character of the winter varieties is also showing up well, and I expect to take notes on habit of growth next Saturday.

One curious thing noticed about the wheat at Davis this year is the large number of albino plants. The albinism is completed in some cases but more often consists of striping. It appears most abundant in the hybrids and in a few of the Australian varieties.

The fair weather has given the farmers an opportunity to finish sowing their spring grains. There probably will be very little sowing after this date. The fall-sown grain is in good condition in most cases, except where there has been injury from excessive moisture. I made a trip to Chico several weeks ago and found that the injury caused from excessive moisture was more noticeable there than at Davis, especially on the adobe lands.

The prospects are good for good grain crops, although the acreage will probably be somewhat reduced on account of the wet winter.

Agricultural Experiment Station, Berkeley (Fred N. Briggs) (No report)

CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15

March 31, 1923

No. 6

Personnel (March 16-31) and Project Issue.

PERSONNEL ITEMS.

Charles E. Chambliss, agronomist in charge of rice investigations, left Washington March 21 for points in South Carolina, Florida, Georgia, Alabama, Louisiana, and Texas to confer with officials of the agricultural experiment stations in those States and with commercial men interested in rice investigations. Mr. Chambliss also will inspect the experiments at the Rice Experiment Station at Crowley, La., before his return early in May.

Dr. Lowell F. Randolph, instructor of botany at the New York State College of Agriculture, Ithaca, N. Y., has been appointed agent to conduct investigations of fundamental cytological problems of corn in cooperation with this Office, the appointment to become effective July 1, 1923.

Dr. Randolph's investigations will include preliminary studies of chromosomes in corn, the embryogeny of the corn kernel, and certain problems in plastid formation and possible degeneration in strains of corn with heritable chlorophyll abnormalities.

Dr. E. C. Stakman, agent of this Office and plant pathologist of the Minnesota Agricultural Experiment Station, left St. Paul, Minn., March 26 to travel in several of the States of Mexico in order to determine the possible relation of early spring occurrence of stem rust in Mexico to the subsequent development of this rust in the United States. He was joined March 28 by Wallace Butler, field assistant in barberry eradication at San Antonio, Tex., who will assist Doctor Stakman during part of his month's survey in Mexico.

Gustav A. Wiebe, in charge of the cereal experiments at the Aberdeen Substation, Aberdeen, Idaho, left Washington, D. C., March 17 for his field headquarters, after spending three months in laboratory experiments and the preparation of manuscripts.

VISITORS

Dr. William Crocker, Director of The Thompson Plant Research Institute, Yonkers, N. Y., attended a conference on physiological subjects in this Office early in March.

MANUSCRIPTS AND PUBLICATIONS.

A manuscript entitled "Growing of Rye in the Western Half of the United States," by John H. Martin and Ralph W. Smith, was transmitted March 16 for publication as a Farmers' Bulletin.

An article entitled "Resistance in Rye to Leaf Rust, Puccinia dispersa Erikss.," by E. B. Mains and C. E. Leighty, was transmitted March 17 for publication in the Journal of Agricultural Research. This paper sets forth investigations in cooperation with the Indiana Agricultural Experiment Station.

Galley proof of article for the 1922 Yearbook, entitled "Oats, Barley, Rye, Rice, Grain Sorghums, Seed Flax, and Buckwheat," by C. R. Ball, T. R. Stanton, H. V. Harlan, C. E. Leighty, C. E. Chambliss, and A. C. Dillman, of the Bureau of Plant Industry and O. C. Stine, C. E. Baker, O. A. Juve and W. J. Spillman, of the Bureau of Agricultural Economics, was read March 12 to 15.

Galley proof of paper entitled "Influence of Soil Temperature and Moisture on the Development of the Seedling-Blight of Wheat and Corn caused by Gibberella saubinetii," by James G. Dickson, for publication in The Journal of Agricultural Research was read March 20.

Galley proof of Department Circular 269, entitled "Barberry Eradication Prevents Black Rust in Western Europe," by Dr. E. C. Stakman, was read March 20; page proof was read March 24.

Galley proof of Department Bulletin 1157, entitled "Influence of Spacing on Productivity in Single-Ear and Prolific Types of Corn," by E. B. Brown and H. S. Garrison, was read March 28.

Second Galley proof of article entitled "The Wheat Situation in the Northern Great Plains Area," by Carleton R. Ball, for publication in the Proceedings of the Land-Grant College Association, was read March 14.

Page proof of Department Circular 268, entitled "Kill the Common Barberry with Chemicals," by Noel F. Thompson, was read March 21.

The paper entitled "Effects of the Method of Desiccation on the Carbohydrates of Plant Tissue," by Karl P. Link and T. E. Tottinham, was published in The Journal of the American Chemical Society, v. 45, No. 2, p. 439-447. February, 1923. The investigations on which this paper is based were conducted cooperatively by the Wisconsin Agricultural Experiment Station and the Office of Cereal Investigations.

An article entitled "Flax and Wheat, A New Mixed Crop," by A. C. Dillman was published in The Dakota Farmer, v. 43, No. 5, March 1, 1923.

Farmers' Bulletin 1053, revised edition, entitled "Destroy the Common Barberry," by E. C. Stakman, was received from the Government Printing Office March 19.

The article entitled "Hydrogen-ion Concentration and Varietal Resistance of Wheat to Stemrust and Other Diseases," by Dr. Annie May Hurd, was published in the Journal of Agricultural Research, v. 23, no. 5, p. 373-386, February 3, 1923. Reprints were received March 24, 1923.

A manuscript entitled "The Influence of Soil Temperature and Moisture on Certain Phases of the Helminthosporium Disease of Wheat and Barley," by H. E. McKinney, was transmitted March 30 for publication in the Journal of Agricultural Research.

A manuscript entitled "Electrochemical Treatment of Seed Wheat," by C. E. Leighton and J. W. Taylor, was transmitted March 31 for publication as a Department Circular.

A manuscript entitled "Specialized or Biologic Forms of Puccinia glumarum and Hosts for Form Tritici," by Chas. W. Hunterford and C. E. Owens, was transmitted March 31 for publication in the Journal of Agricultural Research.

A manuscript entitled "Fungicidal Dusts for the Control of Bunt," by Em. W. Mackie and Fred N. Briggs, resulting from investigations conducted in cooperation with the California Agricultural Experiment Station, was read on March 31 and approved for publication as a bulletin of the California Station.

PROJECT REPORTS

CEREAL DISEASE INVESTIGATIONS

(Dr. H. B. Humphrey, Pathologist in Charge)

Imperfect and Sac Fungi, (Dr. A. G. Johnson, Pathologist in Charge)

Cooperative Cereal Disease Investigations, Manhattan, Kansas.

By - L. E. Melchers and C. O. Johnston.

Corn Root Rot.

About 200 rows representing selfed lines of Kansas Pride of Saline, Commercial White, and Kansas Sunflower corn, together with selections from Indiana, Connecticut, and Washington, D. C., were grown at Manhattan in 1922 to study their resistance to corn root, stalk, and ear rot organisms.

Marked differences have been found in these selfed lines in their behavior to symptoms of root rot as well as to smut. Rather extensive studies are being made of the occurrence of organisms on the germinator and their correlation with the symptoms of root rot as it occurs in Kansas. At Marysville, Kans., an extensive cooperative project on corn root rot is being conducted with Mr. C. G. Randell. The various phases which he has been conducting for two years are: (1) The behavior of selfed lines in respect to the corn root rot, (2) the effect of fertilizers and soil ammendments on strains of corn, and (3) a comparison of yield obtained from apparently disease free seed, as compared to slightly and badly diseased seed.

In cooperation with the Agronomy Department, Professors Salmon and Parker have been conducting experiments for two seasons on the comparative yields from apparently disease free seed and that badly and slightly diseased. Seed was classified from germinator behavior. In 1921 there was a slight difference in favor of the apparently disease free, but the results for 1922 show practically no difference.

Extensive seed treatments were conducted last spring, followed by germination tests, when it was found that approximately 50 per cent of Fusarium moniliforme exists on the surface of the seed. Thus far the organisms which are most prevalent are as follows: Fusarium moniliforme is by far the most common; Rhizopus, Penicillium and Aspergillus are about equally common; while Diplodia zeae occurs less than one per cent; and Gibberella saubinetii occurs only in traces. Preliminary investigations are being undertaken in the study of the pathogenicity of Fusarium moniliforme.

Wheat Foot-Rot.

A very extensive project comprising 5 acres of land at Abilene, Kans., has been devoted to a study of the wheat foot-rot problem in Kansas for the past two years. So far, wheat foot-rot has been definitely located in the following countries: Dickinson, Riley, Leavenworth, Jefferson, Rice, Morris, Sedgwick, Saline, and Cheyenne. Up to the spring of 1922 Onchobolus had not

been definitely isolated from diseased material in Kansas. The field symptoms of foot-rot were strikingly similar, however, to the typical take-all disease. In May, 1922, perithecia of Ophiobolus were found on Kansas material. Prior to this cultures of what appeared to be Ophiobolus had been isolated in the laboratories at Manhattan. There seems to be no doubt that in some cases at least the wheat foot-rot symptoms in Kansas are due to the presence of Ophiobolus. An extensive soil fertilizer and amendment experiment at Abilene includes the use of the following:

Sodium nitrate.....80 lbs.	Flowers of sulphur.....100 lbs.
Potassium sulphate...40 lbs.	Iron sulphate..... 35 lbs.
Acid phosphate.....100 lbs.	Lime unslaked.....1,500 lbs.
2-12-0 fertilizer...100 lbs.	Lime slaked.....2,000 lbs.
2-12-2 fertilizer...100 lbs.	Gypsum..... 300 lbs.
	Sulphur inoculated..... 200; 400; 600 lbs.

A study of soil treatments by means of formaldehyde, varietal studies including some 180 varieties, and rotation plots containing corn, oats, sorghum and wheat in twentieth acre plots are also included.

Native Grasses and Their Relation to the Wheat Foot-Rot Problem.

At Manhattan, a careful record is being made of the rate of spread of take-all in the plots on the agronomy farm. The most severe infection in the State has appeared in the date and depth of plowing plots which are being continually sown to wheat. Two years' records are available showing the rate of spread of this disease. In many cases the spots increased 100 to 200 per cent in size. This disease appeared for the first time last spring in another portion of the farm which is being devoted to the fertility wheat plots. These spots in 1922 were comparatively small.

CEREAL RUSTS

Wheat Rust Investigations

Besides varietal notes on leaf and stem rust of some 250 varieties at Abilene, Kans., extensive greenhouse studies were conducted at Manhattan by Mr. C. O. Johnston. He reports the following work under way:

A study of the inheritance of resistance to leaf rust was begun in the fall of 1921, the object being to produce, if possible, a soft red winter wheat for eastern Kansas carrying the resistance to leaf rust that Kenred normally carries in the central and western part of the state. With this in view about 50 plants each of known strains of Kenred, Fulcaster, and Harvest Queen were grown in the greenhouse during the winter and used in making a number of crosses. In these operations, Kenred was used as the parent carrying leaf rust resistance, and either Fulcaster or Harvest Queen for the parent carrying the soft red winter characters. In all, 75 crosses were made and of this number 45 were successful, yielding 157 F₁ seeds. All parental plants were inoculated twice with a culture of leaf rust during the season, the first while they were in the rosette stage and again after they

came into heading. Careful records were kept on the behavior of each plant. In connection with the greenhouse work a leaf rust nursery containing 128 varieties was sown in the fall. About the middle of April seedlings carrying leaf rust were taken from the greenhouse and used as centers of infection in the field. A very severe epidemic of leaf rust occurred, closely followed by an epidemic of stem rust.

This fall, 123 of the 157 F_1 seeds obtained in 1921 were sown in the greenhouse and the remaining 34 in the field. A large number of parental plants are being grown in the greenhouse in connection with the F_1 generation. The strain of leaf rust used last year was carried through the summer and is again being used for inoculating the F_1 and parental plants being grown this year. A leaf rust nursery of 207 rows was sown again this fall. In addition, all surplus seed of the parental plants which entered into the crosses made last year was sown in the nursery, to be used in making further crosses in the spring and comparing their rust behavior in the greenhouse and in the field. The plants in the greenhouse were first inoculated when about five weeks old. A careful examination on November 29 revealed the presence of considerable leaf rust in some rows in the nursery.

The leaf rust nursery for 1923 consists of 167 varieties. This has been sown on the new field belonging to the Department of Botany and Plant Pathology, which has been secured just west of the new stadium. It is ideally situated for rust work.

On account of the building of the new stadium, it became necessary to release about an acre of the best land which had been devoted to cereal disease work. Land has been secured just west of the new stadium which promises to be satisfactory. It has been very difficult, however, to get the land in the best condition for the winter wheat nursery. In a year or two it is expected that the land will be considerably improved for cereal, forage crop and vegetable disease investigations.

Grass Nursery

A grass garden has been maintained in connection with cereal rust studies during the last four years. In 1919 there were twelve rows with seven species represented. The number of rows and species grown has increased each year since that time, the 1922 garden containing 231 rows with 176 species and the 1923 garden 234 rows with 147 species and 51 genera represented. In 1921, 34 species confined to the following genera were rusted: Aeropyron, Bromus, Hordeum, Phalaris, Avena, Elymus, Poa, and Triticum. On examination, 12 proved to be infested with Puccinia graminis, 2 with P. triticea, and 1 with P. coronata. In 1922, 32 species including the following genera were rusted: Allipecurus, Aeropyron, Arrhenathera, Avena, Andropogon, Bromus, Elymus, Festuca, Hordeum, Holcus, Poa and Polypogon. Of these, 12 proved to be infested with P. graminis, 2 with P. triticea, and 2 with P. coronata.

With the exception of the rust on Hordeum pusillum and Allipecurus geniculatus, the appearance of infection in the grass garden has been later than the first infection noted on adjacent plots of cereals and there is practically no evidence indicating that the grasses are very important factors in the rust epidemics experienced in this particular locality.

CEREAL COURIER

Official Messenger of the Office of Cereal Investigations.
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15

April 10, 1923.

No. 7

Personnel (April 1-10) and Field Station (March 1-31) Issue.

PERSONNEL ITEMS.

Carlton R. Ball, Cerealist in Charge, will leave Washington April 21 to attend the fifth annual conference of the State Leaders, cooperators, and collaborators in the barberry eradication and the men engaged in rust epidemiology investigations, which will be held at Urbana, Ill., April 23, 24 and 25. Before his return to Washington Doctor Ball will confer with State officials and specialists in Illinois and Indiana concerning cooperative investigations of cereals and cereal diseases.

J. C. Brinsmade, Jr., assistant agronomist in charge of the flax experiments at the Northern Great Plains Field Station, Mandan, N. Dak., left Washington April 2 to return to his field headquarters. He stopped at Urbana, Ill., to collaborate with Dr. C. M. Woodworth in the preparation of a manuscript on the genetics of flax. He also expected to confer with officials of the agricultural experiment stations at St. Paul, Minn., and Fargo, N. Dak., concerning problems of flaxseed production.

J. Allen Clark, agronomist in charge of western wheat investigations, returned to Washington April 1 after an absence of 10 months spent in studying material in wheat-breeding nurseries in Kansas, California, Oregon, Minnesota, and North Dakota. At University Farm, St. Paul, Mr. Clark made a special study of inheritance in a cross between Kota and Hard Federation wheats, upon which is based his thesis presented to the University of Minnesota as a partial fulfillment of the requirements for a degree of Master of Science.

Frank Frolik was appointed April 10 as field assistant in the rust epidemiology studies conducted in cooperation with the Minnesota Agricultural Experiment Station at St. Paul.

Wilbur A. Korfhage was appointed agent April 2 to assist in the stem-rust investigations conducted cooperatively with the Minnesota Agricultural Experiment Station at St. Paul, Minn., under the direction of O. S. Amundt.

Dr. E. L. Lillie, Chairman of the Committee on Biology and Agriculture, of the National Research Council, and professor of ecology in the University of Chicago, was an Office visitor March 19. During his visit the organization of research in cooperation with State experiment stations and other agencies, as exemplified in the corn root rot and the black-stem-rust projects, was explained to him. Introductory remarks were made by Dr. C. E. Ball, the details of the investigation of stem rust were presented by Dr. H. B. Humphrey, the breeding of rust-resistant wheats by J. H. Martin, and the corn root-rot research by Dr. A. G. Johnson. Doctor Lillie was accompanied by Dr. E. D. Ball, Director of Scientific work, and by Dr. W. A. Taylor, Chief of the Bureau of Plant Industry.

Merritt N. Pope, agronomist in barley investigations, will leave Washington April 14 to study experimental barley nurseries at Tifton, Ga., Sacaton, Ariz., Davis, Calif., Manhattan and Colby, Kans., and Akron, Colo. He will be in the field until July 1.

During the past week a collection of early varieties of corn obtained by E. D. Richey from T. B. Macaulay, of Hudson, Ontario, has been prepared for planting and sets comprising 150 to 200 individual ears have been sent to Cornell University, Ithaca, N. Y., Akron Field Station, Akron, Colo., and Central Experiment Farm, Ottawa, Ontario. Composite samples of a number of the strains were sent to Dickinson, N. Dak., Duluth, Minn., Sitka, Alaska, and to Dr. A. Volkart, of the Experiment Station for Agriculture at Oerlikon-Zürich, Switzerland. These experiments should give a comprehensive idea of the adaptation of these varieties.

Hugo Stoneberg, in charge of cooperative corn investigations at the Louisiana Agricultural Experiment Station, has been granted permission to pursue graduate study at the Louisiana University, looking toward the degree of Master of Science. The course will include pathology of the corn plant under Dr. C. W. Edgerton.

Fred A. Soderstrom was appointed April 2 as unskilled laborer in the experiments in cereal production and cereal diseases conducted at Manhattan, Kans., in cooperation with the Kansas Agricultural Experiment Station.

MANUSCRIPTS AND PUBLICATIONS

Page proof of article entitled "The Influence of Soil Temperature and Moisture on the Development of the Seedling-Blight of Wheat and Corn Caused by Gibberella saubinetii (Mont.) Sacc.," by James G. Dickson, for publication in the Journal of Agricultural Research, was read April 9.

Farmers' Bulletin 1303, entitled "The Club Wheats," by J. Allen Clark and John H. Martin, was received from the Government Printing Office March 31.

U. S. Department of Agriculture Bulletin 1137, entitled "Symptoms of Wheat Rosette Compared with Those Produced by Certain Insects," by Harold H. McKinney and Walter H. Larrimer, was received from the Government Printing Office March 31.

The article entitled "Experiments with Hot Water, Formaldehyde, Copper Carbonate, and Chlorophol for the Control of Barley Smuts," by W. H. Tisdale, J. W. Taylor, and Marion A. Griffiths, was published in *Phytopathology*, v.13 no. 4, p. 153-160. April, 1923.

Farmers' Bulletin 1304, entitled "The Durum Wheats," by J. Allen Clark and John H. Martin, was received from the Government Printing Office April 2.

U. S. Department of Agriculture Circular 269, entitled "Barberry Eradication Prevents Black Rust in Western Europe," by E. C. Stakman, was received from the Government Printing Office April 4.

U. S. Department Circular 268, entitled "Kill the Common Barberry with Chemicals," by Noel F. Thompson, was received from the Government Printing Office April 7.

TRANSLATIONS.

v. Caron-Eldingen. Steinbrand und physiologische Spaltungen. (Stinking smut and physiologic variation.) Deut. Landw. Presse 47: 514. 1 pl. 1920.

Dieterl, P. Versuche ueber die Keimungs - bedingungen der Teleutosporien einiger Uredineen. (Experiments regarding the conditions of germination of the teliospores of some Uredineae.) Centralbl. Bakt. 4. Parasitk. 31; 95-106. 1912.

Hoeks, L. Beobachtungen der Ueberwinterungsart von Pflanzen parasiten. (Observations on the hibernation of plant parasites.) Naturwiss. Zeitschr. Forst u. Landwirtsch. 9: 44-53. 1911.

Henning, E. A few words about legislation concerning Berberis vulgaris. Reprinting from "Landtmannen." [1915]

Hori, S. Leaf spot diseases of cereals. Bull. Imp. Agr. Exp. Sta. Nishigahara, Japan 14: 134-141. 1. pl. 1899

Ishii. Control experiments for shrink disease of rye. Bull. Imp. Agr. Exp. Sta. Nishigahara, Japan. /65-68. 1899

Morottini, A. Sulla efficacia dei trattamenti polverulenti contro la "carie" del frumento. (The efficiency of powders for controlling smuts of cereals.) Staz. Sper. Agr. Ital. 54: 293-315. 1921.

Nilsson-Ehle, H. Resistenz gegen Gelbrost beim Weizen. (Resistance to yellow rust in wheats.) Lands Univ. Arsskr. N. F. Afd. 2, Bd. 7, no. 6, p. 57-81. 1911.

Rostrum, E. Biologiske Arter og Racer. (Biologic species and races.) Det. Tidsskr. 20: 116-125. 1895-6.

Schaffnit, E. Zur Bekämpfung der Pilzkrankheiten des Getreidenkorns. (Combating seed-borne fungus-diseases.) Landwirt. Jahrb. 57: 259-283. 1922.

The above list of translations of foreign papers on cereals and cereal diseases supplements the lists found in the Cereal Courier, v. 13, p. 12-15, 52, 69, and 225-226; v. 14, p. 38, 39, and 99-100; and v. 15, p. 11-13. The translations are available in the library of the Bureau of Plant Industry.

BARBERRY ERADICATION CONFERENCE.

The annual conference of State leaders, cooperators, and collaborators in the barberry eradication campaign, and the men engaged on studies of stem-rust epidemiology, will be held April 23, 24 and 25 at the Illinois Union Building, University of Illinois, Urbana. The results of the barberry eradication and rust epidemiology studies conducted during the past year will be presented and plans for spring and summer surveys and methods of eradication will be discussed.

It is expected that the following from the Bureau of Plant Industry will be in attendance at the conference: H. E. Allanson, Assistant in Charge of Business Operations, Carlton R. Ball, Cerealist, F. E. Kempton, Pathologist in Charge of Barberry Eradication and N. R. Carmichael, Assistant in Barberry Eradication, F. C. Meier, Pathologist, Office of Cotton, Truck and Forage-Crop Disease Investigations, the leaders of barberry eradication in the 13 north-central States, and E. C. Stakman and his assistants in stem-rust epidemiology. It is expected that several cooperating officials, as well as Harrison Fuller and assistants of the Conference for the Prevention of Grain Rust, Minneapolis, Minn., also will be present.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, and Substations (R. R. Childs)
(No report)

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor) (No report)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love)
(No report)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (No report)

Louisiana Agricultural Experiment Station, Baton Rouge (H. Stoneberg)
(March 30) The cooperative corn experiments were planted March 7 to 15. From February 24, the date of my arrival, to March 6, the weather was cool and unfavorable for corn planting. From March 7 to 15 the weather was favorable but continuous rains since then have prevented field operations. Frosts occurred on February 17 and 19 and a slight freeze on February 20. This was the longest period of cold weather during the winter. The earliest planted corn which was just emerging was nipped back $\frac{1}{2}$ to $\frac{1}{2}$ inch. However, it is coming along nicely at this time.

The experiments consist of tests of the productivity and resistance to insect damage of crosses between inbred strains more or less homozygous for long shuck extension, within and between various varieties. The productivity and inheritance of ear and kernel characters of crosses between selfed lines comparatively pure for several different characters are also being studied. The selfed lines represented in these crosses will be continued and various crosses will be made between these lines.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (No report)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (No report)

IOWA

Agricultural Experiment Station, Ames (L. C. Burnett) (March report)
The severe storm which struck here March 15 and which was repeated again on the 18th has set back the spring work probably to the extent of two to three weeks. It is not apparent that any damage has been done to winter wheat or clover seedings. The work preparatory to spring seeding has progressed very satisfactorily. The only thing left to be done is to weigh out 500 nursery samples. The corn work has progressed very satisfactorily during the last two months. Germination and seedling tests have been run on approximately

2,000 selfed ears. A great deal of interesting and at least some valuable data have been secured relative to the chlorophyll deficiencies of the stocks that were used in starting the breeding projects last year. Arrangements are being made to complete this work in the field before it is necessary to plant the ears in the breeding plats.

Iowa State College, Ames (Barberry Eradication, J. H. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (No report)

Post Office Building, Urbana (Barberry Eradication, Edwin D. Griffin for G. C. Curran) (March report) During the first part of March E. D. Griffin, acting State leader, visited Purdue University, La Fayette, Ind., and consulted with K. E. Beeson, State leader in Indiana, in regard to the rust epidemiology studies in connection with barberry eradication. The purpose of the trip was to get acquainted with the methods and results of the rust observational work carried on last year in Indiana.

G. C. Curran, the State Leader, returned at the end of March from St. Paul, Minn., where he has been for the past three months pursuing graduate study in plant pathology under Dr. E. C. Stakman. Plans were made at once for field work which will start the first week in April.

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer) (No report)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (March 26) The work at La Fayette is progressing very well in preparation for the field experiments this coming summer. Kernels from over 3,000 ears have been tested in petri plates for internal infection. Ten kernels were taken from each ear and the technique followed was that which was developed at the Wisconsin laboratory. The same ears have been tested in the greenhouse as well.

Many community testers are operating in the State and this work is under way on a bigger scale than ever. Last year over 50 counties had adopted the modified rag-doll method for their community testing.

Two of the physiological experiments have just been completed and the results from these confirm those of last year, and many new additional facts have been learned regarding the effects of varying nutritiin upon the susceptibility of young corn plants to attack by Gibberella saubinetii. One of the experiments was conducted in the temperature tanks and the other in a series of large sinks. It is very evident that different strains of corn vary markedly in their capacity to absorb the various nutrient elements and in their relative susceptibilities to root rot.

Dr. Mains has been inoculating all of the seedlings grown in the greenhouse to test the various strains for rust resistance.

The National Fertilizer Association has established a fellowship with the Indiana Agricultural Experiment Station whereby it will be possible to study the effects of fertilizers upon corn plants in the field. This fellowship will run for three years and during this time the fundamental information we are obtaining in our physiological experiments can be tested in the field. These data will be of much practical importance.

Purdue University, College of Agriculture (Barberry Eradication, K. E. Beeson) (No report)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, John W. Baringer) (No report)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) (No report)

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, William A. Walker) (March report) Publicity material is being prepared for distribution in the counties in which it is expected to conduct a farm-to-farm survey this summer. Bulletins and other publicity material will be sent next month to the teachers of the rural schools.

Applications for summer positions as field assistants are quite numerous and a good force should be available in June. Five or six men will begin the survey on May 1 in the city and county of Milwaukee.

Southern Wisconsin has been covered almost continually with snow since January 1. All roads out of Madison are still impassable for auto traffic.

Stem-rust uredospores have had better protection for overwintering than for several years. However, tests made in February of uredospores collected on fall grain at the University Farm showed a weak germination of less than one-half of one per cent.

A set of epidemiology hand-books with samples of wild grasses is being prepared for the field force.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (No report)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger) (No report)

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker) (No report)

Hays Branch Experiment Station, Hays (B. B. Bayles) (No report)

COLORADO

Akron Experiment Farm, Akron (F. A. Coffman) (March 16) I arrived at Akron Field Station March 8. The weather at Akron has been comparatively dry and open the past winter and as a result soil moisture conditions are such that soil blowing is very likely to occur unless considerable moisture falls in the near future.

Winter wheat on the station is in a rather uncertain condition. Much of the wheat has not received sufficient moisture to cause it to emerge. Many plants are so weak that they have curled up in the surface soil but have lacked sufficient vigor to push through to the surface. The prospect for such plants is not bright.

Farmers over the country appear reasonably well satisfied with the condition of their wheat, but all agree that moisture is badly needed. From talks with farmers it appears that most of the wheat is coming up.

The winter-wheat nursery has been seriously damaged during the past winter, due apparently to birds scratching out the sprouting grain. A large flock of birds has wintered on the Station.

Little or no farm work has as yet been done in this section, although with favorable weather conditions the preparation of the soil and seeding of spring grain probably will start within the next ten days.

Weather conditions during the first half of March have been mild. A light snow storm occurred March 14, when about 3 inches of snow fell. The temperature dropped to -1 degree the night of March 14.

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren) (No report)

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel) (No report)

WYOMING

Cheyenne Experiment Farm, Archer (A. L. Nelson) (No report)

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter) (No report)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Hutton) (No report)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brantzel)
(No report)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, Geo. C. Mayoue) (No report)

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.)
(No report)

Dickinson Substation, Dickinson (Ralph W. Smith) (No report)

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May) (March 31) On account of the muddy condition of the fields and lack of time I have not made an investigation of the winter wheat experimental plats but from talking with a few farmers I learn that much of the winter wheat is thought to be dead. This is particularly true of winter wheat sown on the medium dates. Wheat which was sown early or late as a general rule has survived the winter in good condition. Wheat which emerged during December and perhaps also during the latter part of November in many instances was not able to withstand the strong dry winds and soil blowing which occurred during January.

Considerable snow has fallen since January. The mild weather of the past four or five days has melted nearly all of the snow remaining on the ground.

Beginning this spring, the number of replications of the plat varietal experiments will be reduced from five to four.

Mr. N. F. Woodward has recently moved from the Havre Field Station to the Judith Basin Substation. He has rented a house in Moccasin.

State College of Agriculture, Bozeman (Barberry Eradication, W. N. Christopher) (No report)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (A. E. McClymonds) (No report)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (No report)

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones) (March 20) I have been at the station the past few days. About one-third of the land to be cropped this year has been plowed, and the remainder is being plowed.

The weather is dry and, if the strong north wind continues much longer it will no doubt materially damage the wheat and barley crops. The rice stubble is almost too dry now to be plowed with stock, but it can be plowed with a tractor.

We had only 0.52 inch of rain during February and practically none this month to date.

(April 1) This has been the driest spring in California for many years. The normal precipitation for January, during the 8-year period from 1914 to 1921, was 4.97 inches; February 4.43 inches; and March, 2.80 inches. This year we had 2.66 inches of rain in January; 0.52 inch in February; and one shower during the night of March 31. If the 0.36 inch of rain recorded this morning fell before midnight of March 31, the total for the three months this year is 3.64 inches, while the normal rainfall for these months is 12.21 inches, a total shortage for the three months of 8.57 inches.

In addition to the prolonged drought we have had an unusually large number of days of north wind during the past month. North winds are very drying in this valley. As a result of this combination of dry weather and north winds the fall-sown and winter-sown wheat, barley, hay and pastures are in a rather critical condition. However, if we should get an inch or two of rain at this time cereal, hay, and pasture crops would no doubt improve materially.

Nearly all of the Station plowing is done and about half of the land is worked down ready to seed. Plowing is very difficult and costly, due to the dry condition of the soil. It is necessary to plow deeper than we desire in order to keep the plows in the ground. Land plowed in this condition turns in huge lumps and is very hard to reduce to a good seed bed. A good rain at this time would aid materially in plowing and preparing a seed-bed. If the weather continues dry, rice seeding probably will begin earlier than normal this spring.

We are having occasional showers today and the prospects for a good rain are favorable.

University Farm, Davis (V. H. Florell) (March report) The long continued spring drought was broken March 30 to April 2 by some fairly good rains. This is one of the longest periods of drought on record for this time of the year, having extended through most of February and all of March. The precipitation has revived the crops, but more will be needed before long.

The cereals in the experiments at Davis have stood the drought very well, inasmuch as they were sown on fallow. Winter and spring sown commercial fields show signs of considerable injury. A small acreage of grain was sown during the latter part of February by farmers in the vicinity of Davis. This had not yet emerged before the rain came.

Quite a number of barleys in the barley classification nursery are now fully headed or have begun heading.

Sunset wheat is in an advanced state of heading, and a number of other varieties are beginning to head, including the Federation varieties.

Fulghum oats are also beginning to head.

Earliness notes are now being taken on the Sunset x Marquis cross, which is being studied for inheritance of earliness. The majority of rows in this cross have begun to head.

Agricultural Experiment Station, Berkeley (Fred W. Briggs) (No report)



CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15

April 20, 1923

No. 8

Personnel (April 11-20) and Field Station (April 1-10) Issue.

PERSONNEL ITEMS.

Henry D. Barker, agent in the cereal-disease investigations conducted in cooperation with the Minnesota Agricultural Experiment Station at St. Paul, Minn., resigned April 15 to become associate plant pathologist with the Mississippi Agricultural College.

A. M. Brunson, formerly of the Illinois Agricultural Experiment Station, who received his doctorate degree from Cornell University in February, was appointed agent in this Office effective April 16. He will have charge of cooperative corn experiments at the Kansas Agricultural Experiment Station, with headquarters at Manhattan, and will supervise corn experiments at field stations of this Office in the northern Great Plains. Doctor Brunson spent several days in Washington conferring with Bureau officials before proceeding to Manhattan.

Ralph U. Cotter, State leader in barberry eradication in Wyoming, has been granted leave of absence without pay to June 15 in order to engage in full-time graduate work at the University of Minnesota. At the termination of his leave of absence he will return to Laramie, Wyo., to resume summer activities in barberry eradication.

Dr. J. G. Dickson, agent in the cooperative relations between this Office and the Wisconsin Agricultural Experiment Station, will present a paper entitled "The Nature of Resistance to Seedling Blight of Wheat and Corn" before the meeting of the National Academy of Science in Washington, April 23 and 24. While in Washington Doctor Dickson will confer with officials of the Bureau of regarding cereal-disease investigations.

Dr. Harry V. Harlan arrived in London March 10. Under date of March 23 he wrote from Algiers that he had received courteous treatment from officials and others. The barley in the market is mostly imported because of the fact that in the three preceding years the native crop has been very small. Therefore it will not be possible to collect bulk seed until harvest of the present year, which in southern Algeria will start about April 1 and in the north not until the middle of April. Doctor Harlan expected to go to the southern part of Algeria in time for the harvest there and probably will remain in the country until May 1.



On April 3 he wrote from Tougourt (Tuggurt), an oasis in the northern part of the Sahara, where he states he obtained several samples of barley and wheat. On March 29 he visited Tringad, the site of an ancient Roman city and on March 30 and 31 was at Biskra.

Dr. F. E. Kempton, pathologist in charge of barberry eradication, and N. Ray Carmichael, assistant pathologist in barberry eradication, will attend the fifth annual conference of State leaders, cooperators, and collaborators, and investigators of rust epidemiology to be held at the University of Illinois, April 23, 24, and 25. Before returning to Washington they will inspect field operations in several of the States in the barberry eradication area.

H. H. McKinney assistant pathologist in cooperative cereal-disease investigations conducted at Madison, Wis., and Dr. S. P. Doolittle, of the Office of Cotton, Truck & Forage-Crop Disease Investigations, have recently discovered intracellular bodies in healthy as well as mosaic plants of beans, tomatoes, and red clover, and also in healthy plants of alfalfa, garden peas, and sweet peas. These discoveries will be published in detail in a forthcoming article in *Phytopathology*.

Lester J. Sand of Roanoke, Ill., has been appointed ^{clerk} under the direction of J. R. Holbert, pathologist in charge of cereal-disease investigations at Bloomingington, Ill. Mr. Sand succeeds to the position formerly held by Waldo M. Winters, who recently resigned.

Dr. E. C. Stakman, agent in the cooperative cereal investigations at University Farm, St. Paul, Minn., writes from Leon, Mexico, under date of April 8 that since his arrival in Mexico the previous week he had seen many wheat fields in the States of Coahuila, Puebla, and Guanajuato, having visited the best wheat-growing sections of Mexico outside of Sonora. He and Mr. Butler did not expect to go farther south than Atlixco, Puebla, although considerable grain is grown in Oaxaca, because of lack of time and funds, nor was it thought necessary to go to Guadalajara, since the State of Guanajuato is considered a better wheat-growing region and quite like that near the city of Guadalajara. As the State of Vera Cruz does not produce very much wheat it was decided to omit Tuxpan and go on to Torreon, then to Piedras Negras, and thence across the Rio Grande home. Puccinia graminis, P. glumarum, and P. triticea were noticed in abundance, P. glumarum occurring as far north as Saltillo. It will be very interesting to determine whether or not it is carried up from the State of Guanajuato into Texas where apparently it does not occur. Exposures of slides from airplanes will be made at several points along the border.

Some information was obtained on barberries, although fall and early winter is said to be the best season for such studies.

Victor V. Sturlaugson, of Svold, N. Dak., was appointed field assistant effective April 16, to assist in the cereal investigations conducted at the Dickinson (N. Dak.) Substation, under the direction of Ralph W. Smith, assistant agronomist.

MANUSCRIPTS AND PUBLICATIONS

Page proof of the revised edition of Farmers' Bulletin 958, entitled "Standard Broomcorn," by Benton E. Rothrock, formerly of this Office, was read April 12.

Second galley proof of article for the 1922 Yearbook, entitled "Oats, Barley, Rye, Rice, Grain Sorghums, Seed Flax, and Buckwheat," by C. R. Ball, T. R. Stanton, H. V. Harlan, C. E. Leighty, C. E. Chambliss, and A. C. Dillman, of the Bureau of Plant Industry, and O. C. Stine, O. E. Baker, O. A. Juve and W. J. Spillman, of the Bureau of Agricultural Economics, was read April 13; page proof was read April 16.

Galley proof of the article entitled "The Inheritance of Growth Habit and Resistance to Stem Rust in a Cross Between Two Varieties of Common Wheat," by Olaf S. Aarnødt, for publication in The Journal of Agricultural Research, was read April 14.

Galley proof of Department Bulletin 1155, entitled "Rice Experiments on the Biggs Rice Field Station in California," by Jenkin W. Jones, was read April 20.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens.
(No report)

(R. R. Childs)

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor) (April 14) The winter cereal crops have begun to grow vigorously, and more winter injury to oats and barley is evident now than earlier in the season. Much of the winter injury is due to heaving, particularly on the poorer soils where the plants made little fall growth. The section of land on which the seed treatments for controlling smuts are being tested shows the greatest decrease in stand, and unless heavy tillering occurs the yields will be poor.

Most of the Aegilops -wheat F_1 hybrids made by Mr. Sando are now in head in the greenhouse and present many interesting characters. The F_2 generation of the natural wheat-rye hybrids resulting from the plants found in 1922 are heading. Types as near as or nearer to rye in head character than the F_1 are present.

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love)
(April 12) March has been an unusually cold month, with the temperature down almost to zero twice. The month began with a rather warm spell, which melted the snow which had protected the wheat during the winter. At this time the wheat looked very good. This favorable weather was followed, however, by high winds and low temperatures and at present wheat does not look so promising.

The oats and barley for the spring sowing now are ready and, if weather permits, we will begin our seeding soon after the 15th.

We have about 3,000 rows in our rod-row test of wheat this year, containing 1,759 strains, as follows: 7 varieties, 15 selections, and 1,737 hybrids. Also, 1,545 hybrid plants are being grown in 5-foot rows and 1,051 heads from plants grown in California are being tested in 3-foot rows. These were taken from the several different crosses between winter and spring wheats and from species crosses.

There will be 4,300 rod rows in our oat test this year consisting of 652 strains, as follows: 8 varieties, 21 selections, and 623 hybrids.

In the barley test we will have 930 rod rows. There are 88 strains in this test; 5 varieties, 23 selections, and 60 hybrids. This does not include the extension work out in the State.

The wheat and oats sown in the greenhouse for crossing are coming on very slowly owing to the unfavorable weather and no hybridizing has been done yet.

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HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (No report)

Louisiana Agricultural Experiment Station, Baton Rouge (H. Stoneberg)
(No report)

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (No report)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (No report)

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins) (No report)

Iowa State College, Ames (Barberry Eradication, J. H. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (No report)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer) (No report)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (No report)

Purdue University, College of Agriculture (Barberry Eradication, K. E. Beeson) (No report)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, John W. Baringer) (No report)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)
(No report)

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, William A. Walker) (No report)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report)

(Wheat Breeding Investigations) (O. S. Aamodt) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (No report)

59

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger) (April 16)
Although several light rains have fallen this spring, more moisture is needed for spring work. Wheat looks better than would naturally be expected, considering the dry winter. From present indications there will be a larger acreage of broomcorn and grain sorghums than last year. Not so much corn will be planted as in 1922.

The first series of plats in the date-of-seeding experiments was seeded April 14. The varieties included in this experiment are Acme broomcorn, Dwarf milo, Sunrise kafir, and two varieties of forage sorghums.

The precipitation for this year to date is as follows:

January	0	March	1.86
February	.06	April	.44 (in three showers).

Minimum temperature for this month to date, 29° on the 4th; maximum, 79° on the 6th.

The soil is still cold. There probably will be few peaches in this section, but plums and cherries have a good chance for a crop unless another freeze occurs.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker) (No report)

Hays Branch Experiment Station, Hays (B. B. Bayles) (No report)

COLORADO

Akron Experiment Farm, Akron (F. A. Coffman) (April 1-15) Weather conditions at Akron during the first half of April have been comparatively warm and mild and very suitable for field operations. As a result farmers in the section are busy preparing their soil for seeding spring grain. Much of the winter wheat has been lost because of the dry winter. Many fields are being disked and will be sown to barley or spring wheat.

The winter-wheat plats on the cereal projects have been given a light harrowing. Many plants were curled up in the surface soil and the crust was broken by the operation, helping the stand considerably and at the same time destroying many weed seedlings. The wheat was so well rooted that it was not damaged by the harrowing.

Practically all of the small grain plats have been seeded. More than 500 plats have been sown. The spring nursery seeding is well under way. Some 1,500 to 2,000 rod rows have been sown and about 1,500 nursery rod and head rows remain to be seeded. This will make our small grain seedings this season total over 5,000.

While our crop prospects are not rosy they are much brighter than they were on April 1. Many of the winter-wheat plats contain very good stands, as do also portions of the nursery. The spring wheat has just begun to emerge and the barley possibly will be up before the end of next week.

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)
(No report)

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication,
A. F. Thiel) (No report)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradi-
cation, Ralph U. Cotter) (No report)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Hutton)
(No report)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)
(No report).

Agricultural Experiment Station, Agricultural College (Barberry Eradi-
cation, Geo. C. Mayoue) (No report)

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.)
(April 16) After an unusually severe winter the snow is now practically
gone and field work has begun. The abundance of snow during the winter has
made the prospects of a good crop season more than usually favorable.

The first seeding in the date-of-seeding and tillage experiment with
flax was made today.

The winter wheat in nursery rows sown on fallow which germinated well
in the fall, has winterkilled completely. Winter wheat sown in stubble in
the same field with the wheat on fallow, has survived, although the stand
does not appear to be very thick. A large acreage of flax probably will be
sown in this vicinity, judging by the interest that is being shown in this
crop.

Arrangements are being made by George Ilse, County Agent, for sowing
small acreages of mixed flax and wheat by farmers in the vicinity of Mandan.

Maximum temperature for the first half of April was 59°, recorded April
13; minimum, 15°, recorded April 2; precipitation, 0.57 inch.

Dickinson Substation, Dickinson (Ralph W. Smith) (April 16) The spring
has been rather backward, with the ground frozen or too wet to work till April
12, when disking for cereal plot experiments was begun. On April 13 rain and
snow totaling 0.6 inch of moisture delayed field work till today. The disking
and harrowing of land for the cereal plots is now in progress and the seeding
of wheat varieties is expected to begin tomorrow.

The soil is in excellent condition as regards tilth and moisture con-
ditions.

Winter wheat and rye are in very poor condition because of the poor growth made during the dry, fall weather. That portion of the winter-wheat nursery sown on fallow is almost completely winterkilled, while that sown in grain stubble probably will show sufficient survival to indicate the differences in the winter hardiness of the hybrids.

Many small tractors have been sold in Stark County this spring. As very little fall plowing was done they will be a help in getting the land prepared for seeding before it is too late.

About 175 bushels of No. 98 (Kubanka No. 98) durum wheat has been sent out from this substation this spring for seeding in different parts of the State. This strain of Kubanka, which originated in a head selection made at this substation in 1915, combines satisfactory yield, rust resistance, and good semolina qualities. During the past 5 years it has equaled Monad in yield and surpassed all other varieties at this substation.

Victor V. Sturlaugson of Svold, N. Dak., arrived at the Substation April 15 and will assist in the cereal work during the spring and summer.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May) (April 14) Fall-sown wheat on the cereal project in both plats and nursery is in a very weakened condition. It is impossible to estimate the winter survival at this time with any degree of accuracy. The winter survival may be anywhere from 25 to 85 per cent, depending very largely on weather conditions during the next week or 10 days.

There has been no opportunity to notice many wheat fields, but farmers state that early-sown and late-sown wheat has a better chance than wheat sown on an intervening date. Fall-sown wheat which emerges just before winter weather begins has less ability to withstand adverse winter conditions than early-sown wheat which has attained some size and vigor before winter begins, or late sown wheat which does not emerge until the frost leaves the soil in the spring. This has been very noticeable in many instances during the last four or five years.

The present warm weather is drying the fields rapidly. If it continues spring seeding will begin next week.

Director F. B. Linfield of the Montana Agricultural Experiment Station visited the Substation yesterday. The Substation employees are now excavating a basement for an office building which is to be erected here this spring.

State College of Agriculture, Bozeman (Barberry Eradication, J. W. Christopher) (No report)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe) (April 3) Seasonal conditions are 10 days to two weeks ahead of last year. Over $1\frac{1}{2}$ inches of rain fell during the last three days, making field work impossible. Following this rain the seed-bed will be in excellent condition for spring seeding.

Several winter-wheat varieties were sown last fall and most of these have come through in good condition. Fall sown Federation, C. I. No. 4734 was entirely winterkilled.

Winter barleys sown last fall did not survive the winter.

At the recent session of the State legislature of Idaho appropriation was made for the support of the Aberdeen Substation in the amount of \$4,000 a year for the next two years. In addition, income from sales is available for Substation expenditures.

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (No report)

CALIFORNIA

Biggs Rice Field Station, Biggs, (J. W. Jones) (No report)

University Farm, Davis (V. H. Florell) (No report)

Agricultural Experiment Station, Berkeley (Fred N. Briggs) (No report)



CEREAL COURIER

Official Messenger of the Office of Cereal Investigations.
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15

April 30, 1923.

No. 9

Personnel (April 20-30) and Project Issue.

PERSONNEL ITEMS.

Charles E. Chambliss, agronomist in charge of rice investigations, reported on his return from Louisiana on April 21 that the excessive rains in the rice-growing sections have prevented planters from seeding rice. Over 500,000 acres then remained to be seeded before June 1.

Dr. James G. Dickson, agent in the cereal-disease investigations conducted in cooperation with the Wisconsin Agricultural Experiment Station, while in Washington during the week of April 23 gave an illustrated talk before the Office Seminar April 24 on the influence of environmental factors on the development of head blight and seedling blight of wheat and seedling blight of corn. A brief description was given of the apparatus used in controlling soil and air temperature and relative humidity followed by a discussion of the results (1) of the influence of air temperature and relative humidity upon the development of head blight of wheat, (2) influence of soil temperature and soil moisture upon the development of seedling blight of wheat and corn caused by the wheat-scab parasite, Gibberella saubinetii, and (3) influence of soil temperature upon the chemical composition of the wheat and corn seedlings and the possible correlation of this composition with predisposition and resistance to the seedling blight.

Doctor Dickson left April 28 for New York to confer with officials of Columbia University and the Thomson Institute for Plant Research.

C. H. Kyle, agronomist in corn investigations, left Washington April 26 for Florence and Darlington, S. C. to arrange for corn experiments in cooperation with farmers in that vicinity. He returned April 29, having completed his plantings just before a heavy rain began to fall.

Frederick D. Fitch, agronomist in charge of corn investigations, left Monday evening, April 30, to confer with officials of agricultural experiment stations at Ames, Ia., North Platte, Nebr., Manhattan, Kans., and Akron, Colo., with reference to cooperative corn investigations.

Dr. William H. Weston, Jr. professor of cryptogamic botany at Harvard University and collaborator with this Office, formerly in charge of investigations of the downy mildews, was in consultation with the Office staff from April 25 to 28.

FIFTH ANNUAL CONFERENCE OF BARBERRY ERADICATION WORKERS.

Dr. C. R. Ball, Cerealist in Charge, returned from Urbana, Ill., April 30, with enthusiastic accounts of the conference on barberry eradication held there from April 23 to 25, inclusive. Leaders from all the States were present. All were eager to show briefly and clearly what they had done during the past season and to learn of the program and policy for 1923. The sessions were fully attended and were very business-like, running on schedule time both day and night.

The presentation of the work of the forces employed on rust epidemiology and on the chemical study of barberry eradication made the program complete and brought every man connected with it into full touch with the results obtained in all other divisions of the enterprise.

Only three representatives of cooperating State agencies were present, namely, Prof. L. R. Taft, State Horticulturist, East Lansing, Mich., Frank M. Byrne, Commissioner of Agriculture of South Dakota, and P. A. Glenn, Chief Plant Inspector of the Illinois State Department of Agriculture.

The Conference for the Prevention of Grain Rust was represented by Secretary Harrison Fuller and Vice President Franklin Crosby. Their encouragement to the general work of the campaign and their willingness to help in certain lines of activity somewhat difficult for the Department, insure that no desirable phase of the campaign will be neglected.

The presence of H. E. Allanson, Assistant in Charge of Business Operations, in the Bureau of Plant Industry, was a real advantage to the conference, not only because of the concrete advice he was able to give on many of the difficult administrative questions, but also because of his fine spirit of cooperation and the feeling he engendered that the administrative officers of the Department of Agriculture are striving in every way to lighten the burdens of the men who represent it in the field.

At the banquet on Tuesday night, April 24, inspiring addresses were made by Franklin Crosby, Harrison Fuller, and Doctor Stakman.

The Department of Agronomy of the University of Illinois was a splendid host for the conference, furnishing every facility for meeting, and treating the members to an automobile trip over the campus and the experiment station grounds on the afternoon of the last day.

VISITORS

Dr. J. B. Weems, Chemist of the Va. State Dept. of Agriculture, Richmond, Va., was an Office Visitor April 27.

MANUSCRIPTS AND PUBLICATIONS.

A manuscript entitled "Varietal Resistance in Winter Wheat to the Rosette Disease," by R.W. Webb and C.E. Leighty, of the Office of Cereal Investigations, G. H. Dungan of the Illinois Agricultural Experiment Station, and J. B. Kendrick, of the Indiana Agricultural Experiment Station, was submitted April 27 for publication in the Journal of Agricultural Research.

Page proof of Illinois Agr. Exp. Sta. Bul. 242, entitled "Flag Smut of Wheat, with Special Reference to Varietal Resistance," by W. H. Tisdale, G. H. Dungan, and C. E. Leighty, was read April 24.

The article entitled "Early Vigor of Maize Plants and Yield of Grain as Influenced by the Corn Root, Stalk, and Ear Rot Diseases," by James R. Holbert, W. L. Burlison, H. Howard Biggar, Benjamin Koehler, George H. Dungan, and Merle T. Jenkins, was published in The Journal of Agricultural Research, v. 23, no. 8, p. 583-629, 7 pl. (1 col.), 20 fig. February 24, 1923. The Journal was received April 28, 1923.

PROJECT REPORTS

OAT INVESTIGATIONS

(T. R. Stanton, Agronomist in Charge)

"Carleton," A Variety of Oats Immune to Covered Smut.

Dr. E. F. Gaines, of the Washington Agricultural Experiment Station, Pullman, Wash., during the past winter has discovered that the unnamed variety of oats which he has been carrying under C.I. No. 357-1 is immune to covered smut. In addition, he states in a recent letter to the Office of Cereal Investigations that it has produced a higher average yield than any other oat variety during the 4-year period from 1919 to 1922, inclusive, at Pullman. As this is the first variety of yellow or yellowish-white oats discovered so far that has shown immunity to covered smut, this fact makes it of considerable interest. Doctor Gaines obtained it from the Sherman County Branch Station at Moro, Oreg., in 1919.

This oat has been grown in the varietal experiments at Moro since 1914, where it has been the highest yielding variety. Because of its high yield, D. E. Stephens, superintendent, distributed it to farmers in Sherman county, Oreg., several years ago under the name of "Carleton." As it is now grown commercially to a considerable extent in that county, and also to meet the demand that a definite name be given it, the name "Carleton" has been officially applied to it.

The original lot of seed was obtained in 1904 by M. A. Carleton from the exhibit of Louis Dreyfus & Co., at the Louisiana Purchase Exposition. The original source of the variety is recorded as Dedeagatch, Turkey. It apparently was distributed to several experiment stations, where it was grown for a few years and then discarded. Records are available from the Dickinson, (N. Dak.) Substation, where it was grown for several years with only fair results, and was afterwards discontinued. The strain 357-1 is a selection from the original oat made at Moro, Oreg., by Mr. Stephens about 1913.

The Carleton variety has been distributed to a number of experiment stations in the northwestern States for inclusion in varietal experiments during the current season, in order that its value as breeding material for the development of smut-immune varieties in the future may be determined definitely.

CEREAL DISEASE INVESTIGATIONS

(Dr. H.B. Humphrey, Pathologist in Charge)

Uniform Oat-Rust Nursery.

Uniform oat-rust nurseries, including the several varieties of oats which have shown some resistance to stem rust under either laboratory or field conditions, were sown at 22 experiment stations this spring. In addition, three of the leading agricultural varieties which are susceptible to rust have been included as controls. With the exception of three nurseries in the South, the greater portion are located in the Upper Mississippi Valley, where stem-rust epidemics most frequently occur. The points at which nurseries have been sown are as follows:

Southern (Humid): Knoxville, Tenn., Athens, Ga., and Denton, Tex.

Prairie (subhumid): St. Paul, Crookston, Morris, Waseca, Coon Creek,
and Duluth, Minn.; Chatham, Mich.; Madison, Wis;
Fargo, and Langdon, N. Dak.; Brookings, S. Dak.;
Lincoln, Nebr.; and Ames, Ia.

Great Plains (semiarid): Edgeley, Mandan, and Dickinson, N. Dak.;
Redfield, S. Dak., Archer, Wyo., and Akron, Colo.

These nurseries will be inspected and results noted by a representative of the pathological laboratory at St. Paul, Minn., in cooperation with the Office of Cereal Investigations. It is believed that valuable data will be obtained on the relative resistance of the different varieties under field conditions with varying climatic factors, and also on the distribution of biologic forms of oat stem rust. Looking to the future, nurseries of this kind will be necessary to determine the value of new cross-bred strains of oats from breeding nurseries which are being conducted primarily for the development of rust-resistant varieties of oats.

INVESTIGATIONS OF IMPERFECT AND SAC FUNGI (Dr. A. G. Johnson, Pathologist in Charge)

and

SMUT INVESTIGATIONS (Dr. W. H. Tisdale, Pathologist in Charge)

Soil-Temperature Control Experiments.

Experiments are being conducted at the Arlington Experiment Farm to determine the effects of different soil temperatures on the development of the two kinds of bunt of wheat, flag smut of wheat, loose and covered smuts of barley, and the stripe disease of barley. R. W. Leukel has immediate charge of the experiments. A series of the Wisconsin type of "tanks" for soil temperature control, and a simple refrigeration device, were installed during the winter and operated since the latter part of March. The equipment proved satisfactory in controlling the soil temperatures to within about one degree. The series includes constant soil temperatures at 10, 15, 20, 24, 28 and 32 degrees Centigrade. In the present experiments the soil temperatures were held constant for about a month following seeding, after which all of the plants were left at greenhouse temperatures. This procedure is being followed, as infection by the diseases concerned takes place in the seedling stage. The soil moisture is being held as nearly constant as possible throughout the experiment. The final disease records will be taken later.

CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
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Vol. 15

May 10, 1923

Personnel (May 1-10) and Field Station (April 16-31) Issue.

PERSONNEL ITEMS

C. George Anderson, of Proctor, Minn., was appointed field assistant April 2 to assist in the cereal disease investigations conducted in cooperation with the Minnesota Agricultural Experiment Station on University Farm, St. Paul, Minn.

Dixon L. Bailey, formerly agent in the cereal disease investigations at St. Paul, Minn., resigned April 20 to accept the position of pathologist in charge of the Dominion Laboratory of Plant Pathology, College of Agriculture, Winnipeg, Canada.

Elmer A. Bengala, of Lockwood, Mo., was appointed unskilled laborer May 1 to assist G. A. Wiebe, in charge of the cereal experiments at the Aberdeen Substation, Aberdeen, Idaho.

Dr. Harry V. Harlan writes from El Kantara, Algeria, on April 10, concerning the apparent difficulty of obtaining samples of local varieties of black barley, which, according to accounts by the natives of northern Algeria has disappeared as the result of a great famine some 20 years ago. Doctor Harlan expected to sail for India May 4.

Miss Helen Hart, of Janesville, Wis., was appointed agent April 16 to assist in the rust investigations that are being conducted at University Farm St. Paul, Minn., in cooperation with the Minnesota Agricultural Experiment Station.

Arthur W. Henry was appointed agent April 21 to assist in the rust epidemiology studies conducted in cooperation with the Minnesota Agricultural Experiment Station at St. Paul. He succeeds Dixon L. Baily, who resigned April 20.

Dr. F. E. Merton, pathologist in charge of barberry eradication, returned to Washington May 4 after attending the fifth annual conference of workers engaged in barberry eradication at Urbana, Ill., and inspecting field operations in several of the States in the barberry eradication area.

L. S. Mayer, assistant agronomist in charge of the corn breeding experiments conducted in cooperation with the Tennessee Agricultural Experiment Station at Knoxville, Tenn., was called to Albany, N. Y., May 8 by the illness and death of his mother.

Archibald Saunders, clerk, was transferred to the Office of Crop Physiology, Bureau of Plant Industry, effective May 5.

T. R. Stanton, agronomist in charge of oat investigations, left Washington May 8 to inspect and study experiments with oats at points in North Carolina, South Carolina, Georgia, Alabama, Mississippi, Texas, Tennessee, Kentucky, and Virginia. He also will confer with officials of State agricultural experiment stations in these States, concerning the growing and testing of new strains produced by the Department of Agriculture. He will return to Washington at the end of May.

Dr. W. H. Tisdale, pathologist in charge of smut investigations, will leave Washington May 13 to confer with cooperating officials of the Missouri Botanical Garden, The Illinois State Department of Agriculture, and the Kansas Agricultural Experiment Station, concerning investigations of smuts of wheat and other cereals.

The following field assistants have been appointed for carrying on the spring survey in the barberry eradication campaign of 1923:

Colorado: Ernest A. Lungren, and Bruce J. Thornton; Illinois: Franklin E. Forbes and Edwin D. Griffin; Indiana: Forrest D. McCrea, Charles H. Miller, and Gilbert K. Snively; Minnesota: Roland C. Bovan, Frank A. Douglass, William M. Emerson, and Leslie E. Holt; Nebraska: Charles E. Barth, Edmund J. Kotlar, and Leon G. Samsel; North Dakota: Harper J. Brush and Francis W. Trumbull, Ohio: Israel P. Blauser, William Ellis, Jr., and Ralph H. Hagelbarger; Wisconsin: Lellon S. Cheney, Samuel S. Feldman, J. G. Kempton and Robert C. Sykes.

VISITORS

Herbert R. Cox, Extension Agronomist of the New Jersey College of Agriculture, New Brunswick, N. J., formerly of the Office of Farm Management, U. S. Department of Agriculture, was an Office visitor March 5.

Representatives of The International Association of Agricultural Missions were guests of the U. S. Department of Agriculture at a conference Saturday, May 5. Dr. Carleton R. Ball, Cerealist, was present at this conference and at the preliminary conference held May 4 at the Powhatan Hotel, and spoke of present and prospective special exploration in foreign lands for desirable types of cereals, both improved and primitive, likely to have characters of value for breeding.

MANUSCRIPTS AND PUBLICATIONS.

A manuscript entitled "Improvement of Kubanka Durum Wheat by Pure-Line Selection," by Ralph W. Smith, L. R. Waldron and J. Allen Clark, was transmitted March 24 for publication in the Department Bulletin series.

A paper entitled "Cytological Studies of Infection of Baart, Kanred, and Mindum wheats by Puccinia graminis tritici Forms III and XIX," by Ruth F. Allen, was transmitted May 8 for publication in The Journal of Agricultural Research.

A manuscript entitled "Common Barberry and Black Stem Rust in Indiana," by K. E. Deeson, has been approved for publication as a bulletin by the Purdue University Department of Agricultural Extension. This manuscript is based on results obtained cooperatively by the Indiana Agricultural Experiment Station and the Office of Cereal Investigations.

Galley proof of article entitled "Spores in the Upper Air," by E. C. Stakman, A. M. Henry, G. C. Curren and W. N. Christopher, for publication in the Journal of Agricultural Research, was read May 1.

Galley proof of paper entitled "The Influence of Temperature, Moisture, and Oxygen on the Spore Germination of Ustilago avenae," by Edith Seymour Jones, was read May 5.

Galley proof of paper entitled "Studies on the Life History of Stripe Rust, Puccinia glumarum (Schm.) Erikss. & Henn," by C. W. Hungerford, scheduled for publication in the Journal of Agricultural Research, was read May 9.

Galley proof of Department Circular 273, entitled "Flag Smut of Wheat," by W. H. Tisdale, G. H. Dungan and C. E. Leighty, was read May 10.

Page proof of Department Bulletin 1157, entitled "Influence of Spacing on Productivity in Single-Ear and Prolific Types of Corn," by E. B. Brown and H. S. Garrison, was read May 9.

Illinois Agricultural Experiment Station Extension Bulletin 242, entitled "Flag Smut of Wheat, with Special Reference to Varietal Resistances," by W. H. Tisdale, G. H. Dungan and C. E. Leighty, was received May 1, 1923, date of April, 1923.

The article entitled "Oats, Barley, Rye, Rice, Grain Sorghums, Seed Flax, and Buckwheat," by C. R. Ball, T. R. Stanton, H. M. Dwyer, C. E. Chambliss, and A. G. Dillman, of the Bureau of Plant Industry, and O. C. Stine, O. E. Baker, O. A. Juve, and W. J. Spillman, of the Bureau of Agricultural Economics, appears in the Yearbook of the Department of 1922, received from the Government Printing Office May 8.

May 10, 1925

INDEX OF HEADINGS SHOULD ACCOMPANY MANUSCRIPTS.

Henceforward, each manuscript prepared for publication should be accompanied by a sheet bearing at the top the title of the manuscript, and presenting all the headings and subheadings which the manuscript contains, with their relative rank indicated by the indentation. On this sheet, all ranks should be written in lower case, except for the initial capital. An example is given below:

INVESTIGATIONS OF THE ROSETTE DISEASE OF
WHEAT AND ITS CONTROL.

Introduction.

Cause of the disease.

Non-parasitic factors.

Winter injury.

Soil conditions.

Parasitic factors.

Animal parasites.

Plant parasites.

Summary.

Literature cited.

The submission of a sheet like this will tend to insure that the editors correctly interpret the rank of the various headings in the manuscript. Proof now being read, and examination of some papers recently published, show that errors have been made in interpreting relative ranks, and that these errors have not always been detected and eliminated in proof reading.

Very sincerely yours,

C. R. Ball
Cerealist in Charge.

FIELD STATION CONDITION AND PROGRESS.

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, (R. R. Childs) (No report).

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor) (No report)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love)
(May 7) The weather for April and the first part of May has been unusually cool and dry. Both winter wheat and the spring sown grains need rain badly. Due to winterkilling and to the cold winds and dry weather we have had since the snow went off, winter wheat in some sections is very spotted.

The seeding of the spring grains, oats, and barley was finished at Ithaca on April 28, with the exception of a little increase material which was sown the week following.

The various demonstration and experimental plats in different parts of the State are seeded, with the exception of those in the northern part, where seeding usually is considerably later than at Ithaca.

Mr. Craig is now making new hybrids of both wheat and oats in the greenhouse. Certain of these are made for practical purposes while others are made primarily for the study of the segregation of characters. Some of the oat crosses are made particularly to study problems of sterility arising with certain species. In this connection Mr. Dorsey is checking up chromosome numbers and behavior on the various types so that these two lines of work will go forward hand in hand.

Reports from most of our cooperators, who have been specializing in our improved strains of oats and barley, indicate that most of the available seed has been sold for seed purposes. This would indicate a rather large acreage of improved strains this year.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (No report)

Louisiana Agricultural Experiment Station, Baton Rouge (H. Stoneberg)
(No report)

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (May 1)
The winter in Missouri was unusually mild through January and February, but March was cold and wet. On March 18 and 19 there was a severe general freeze. Oats sown on February 20 and March 5 in a date-of-seeding test were almost completely killed by this freeze. Wheat was not greatly damaged.

The general spring seeding was made on March 28 to 31, about the time at which most of the oats in the State were being sown. The oat nursery this year contains about 4,000 red rows, including the regular variety and pure-line tests, yield tests of Emerson strains from different sources, acclimatization studies, and play technic studies. At present both the oat and wheat nurseries are in excellent condition.

We are now preparing our breeding corn for planting. We are also preparing to test a large number of soybean pure-line selections this season.

TEXAS

Agricultural Experiment Station, Knoxville (L. S. Mayer) (May 8) Planting of corn in the cooperative experiments was scheduled to begin May 9. Mr. Mayer was summoned to Albany, N. Y., May 8 because of the death of his mother, but in his absence Professor Moccors, Vice Director and Agronomist of the Experiment Station will arrange for the care of the experiments.

IOWA

Agricultural Experiment Station, Ames (L. C. Burnett) (May 8) Corn planting was started on the Station plots Friday May 4. The weather has been very dry during the past three weeks. A good shower on the night of May 6 helped materially in fitting the land. General conditions thru central Iowa will show at least 50 per cent of the spring plowing yet to be completed. There seems to be a very good stand of small grain, oats, barley, and winter wheat.

Iowa State College, Ames (Barberry Eradication, J. E. Muncie) (No report)

ILLINOIS

Farm Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (No report)

Post Office Building, Urbana (Barberry Eradication, G. C. Curran) (No report).

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. M. Hoffer) (No report)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (No report)

Purdue University, College of Agriculture (Barberry Eradication, M. E. Eason) (No report)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, John W. Baringer) (April 30) Publicity was a strong feature of the barberry eradication campaign in Ohio, in 1922. Newspaper publicity dispatched from the Columbus office, from the U. S. Department of Agriculture at Washington, and from the Conference for the Prevention of Grain Rust accomplished desired results. All types of barberry-eradication literature were distributed in quantity. Lantern slides were used to advantage. Numerous county fair demonstrations were held. Thousands of circular letters were mailed from our local headquarters to farm bureau members in various counties as the farm-to-farm survey progressed. This method served admirably in giving farmers advance information on our local plans and thus the purpose of the campaign was made plain.

In 1922, fourteen counties were covered in the original survey. Fifteen counties had been covered previously by the same method. The farm-to-farm survey was confined to the northwestern part of the State.

In addition, 98 per cent of the territory covered by the original survey in 1920 and 1921 was covered by a resurvey for sprouts in 1922. Sprouts were found on 10 per cent of the rural properties where barberries had been removed and on 18 per cent of the city properties. Excellent examples of the spread of stem rust from barberries to grain were found last year. In every case of a severe epidemic, the source of the trouble was traceable directly to infected barberries in the vicinity.

Chemicals were applied to barberry hedges and barberry bushes in escaped areas in various portions of the State in 1922. Some of the results were very gratifying.

From present indications nearly all of the more important wheat growing districts of Ohio will be covered by the original rural survey prior to January 1, 1924.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) (No report).

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, William A. Walker) () Field operations began in Milwaukee on the first day of May with four field men. Several barberry plantings have been located.

Rust infection was first noticed by N. F. Thompson at Black Earth, Wis., April 29. It also was found quite abundantly at Marshall, Wis., April 30, by Dr. E. R. Schultz and Allan Dickson.

The summer field force is being selected. Most of the men will start work the second week in June.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report)

(Wheat Breeding Investigations) (O. S. Aamodt) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Molander) (No report)

GRANT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John D. Sieglin) (May 1) During the last half of April one good rain and a number of showers fell. At present the soil is in good condition either for working or for germinating seeds. The sorghums in the first date-of-seeding plats emerged to rather irregular stands on April 27 and 28. To-day, May 1, the second date plats were seeded, including the same varieties as were sown on the first date and Reed Kafir, Dwarf feterita, and feterita in addition.

Wheat is jointing but appears to be rather a thin stand in most fields. The soil is beginning to warm up some. There were several days of rather high wind during the latter part of April.

Minimum temperature for the last half of April, 38° on the 21st; maximum, 83° on both the 22d and 30th. Precipitation for last half of April, 1.87 inches, or a total of 2.31 inches for April as compared to the 9-year average of 2.64 inches.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker) (No report)

Hays Branch Experiment Station, Hays (B. B. Bayles) (No report)

COLORADO

Akron Experiment Farm, Akron (F. A. Coffman) (April 16-30) Weather conditions during the past two weeks have been very favorable to all plant growth. Considerable moisture has fallen and the soil has warmed sufficiently to make plant growth unusually rapid for this time of the year. Practically all of the spring-sown cereals on the farm have emerged and in most of the plats and rows excellent stands have been obtained.

The winter wheat prospects, while much below normal in this section, have improved gradually. The stands in the plats on corn land appear a little better than those on summer fallow. This is possibly due to the winter wheat having sprouted on the fallow while the cornland was too dry for the seed to germinate last fall. Practically no wheat plants which started last fall were able to resist the drought of the fall and winter.

Some of the best stands of winter wheat on the Farm are in the nursery. As a rule the stands in the nursery, however, are poor.

The early seedings of flax have emerged to very good stands and the plants are making a rapid growth. The snow storm the latter part of April, which was followed by several hard freezes, damaged the spring wheat and barley to some extent but did not appear to influence the growth of the flax which was just emerging.

Agricultural College, Ft. Collins (Barberry Experiment, E. A. Langford) (No report)

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication,
A. F. Thiel) (No report)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication,
Ralph U. Cotter) (No report)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Hutton)
(No report)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)
(No report)

Agricultural Experiment Station, Agricultural College (Barberry Eradication,
Geo. C. Haynes) (No report)

Northern Great Plains Field Station, Mandan (J. C. Drinsmaid, Jr.,)
(May 2) The spring field work, already somewhat behind, was still delayed by a fall of about 6 inches/April 23.
of snow

The wheat varietal plats were sown April 27, and the oat and barley varieties April 28. Flax sown April 16 in the date-of-seeding-and-tillage experiment emerged about April 28.

The second sowings of flax in the date-of-seeding experiment were made May 1. Sowings were made in the flax and cereal mixture experiment to-day.

Director Trowbridge of the North Dakota Agricultural Experiment Station visited the Station April 17.

John L. Ferderer has been employed to assist with the Cereal Investigations at the Station, beginning April 23.

On the night of April 29 the embankment on the north side of the new dam across the Heart River gave way, allowing the water to escape around the end of the dam. The north section of the dam is undermined and the entire dam is likely to be washed out.

Maximum temperature for the last half of April 81°, on April 18 and 30; minimum, 25° April 23; precipitation, 1.47 inches, making the total precipitation for the month of April 2.4 inches.

Dickinson Substation, Dickinson (Ralph W. Smith) (May 1) Field work, which was begun at the Substation on April 12, was delayed by light snowstorms, on April 13 and 23. Normal weather has prevailed during most of the month. The total precipitation for the month was 1.78 inches, which was more than half an inch above normal.

Varietal plats of wheat and oats were sown on April 17, 18, and 19. The wheat is beginning to emerge. Varietal plats of barley were sown April 26. The seeding of the cereal nursery was begun today.

The soil is in excellent physical condition and soil moisture conditions have not been so good at seeding time for many years.

Due to lateness of the season and lack of fall plowing considerable grain is being sown on disked grain stubble. Many small tractors are being used and wheat seeding will be finished at about the usual time, which is early in May. The acreage of spring wheat sown in Stark County probably will be about the same as usual. More than the usual acreage of flax will be sown.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May) (April 30) All of the spring grain nursery, except the flax, was sown from April 16 to 23, and all of the spring grain plats, except the flax, were sown from April 27 to 30. The flax probably will be sown before the end of the week. The corn probably will not be planted until about May 10.

Winter wheat is gaining vigor each day. The stand of winter wheat and the Cereal Project will range from 50 to 100 per cent. This includes the nursery as well as the plats.

The precipitation during April was 0.46 inch. Precipitation was recorded on ten days during the month. The average April precipitation during 25 years has been 1.37 inches. The maximum temperature during the month was 76°, on the 17th; minimum, -1° on the 6th.

State College of Agriculture, Bozeman (Barberry Eradication, W. M. Christopher) (No report)

WESTERN BASIN AND COAST AREAS (Nor

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe) (No report)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (April 21) Weather conditions during the latter part of March and the first three weeks of April have been unusually favorable in eastern Oregon. The weather has been considerably warmer than normal, and winter wheat, especially that sown early, is in excellent condition. About half the winter-wheat acreage in eastern Oregon was sown late on account of dry weather last autumn and this wheat is not nearly so far advanced as wheat sown in September and early October. In Sherman County there was practically no winterkilling of winter wheat. Some winterkilling has been reported from other counties, especially Umatilla County, where it was necessary to do considerable reseeding of winter wheat to spring wheat.

The total precipitation at Moro since September 1, 1922, was 9.78 inches which is 0.6 more than the normal for that period. The soil-moisture tests show that the percentage of moisture in ground summer-fallowed last year is as high as its maximum field-carrying capacity. On ground cropped to winter wheat last year, the late fall, winter, and early spring precipitation has penetrated into the fifth foot, which is considerably deeper than usual.

Dr. W. J. Spillman of the Bureau of Agricultural Economics and Director Jardine of the Oregon Agricultural Experiment Station were recent visitors to the Station.

CALIFORNIA

Dix's Rice Field Station, Dixie (J. W. Jones) (April 30) The heavy rains during early April aided materially in preparing good seed-beds on the old rice land. We have our land all prepared for sowing, and have, on the whole, a good seed bed.

We sowed and sown our first rice April 25. Since then, we have sown and irrigated the varieties in tenth-acre plots, the small increased plots, the rice-of-seedling experiment, and a number of the water-rice control experiments which call for early irrigation.

Few of the commercial growers have irrigated yet, but many are expected to use water during this and next week. It is estimated that the rice acreage will be materially lower this year than last year, but it is still too early to make a reliable estimate.

University Farm, Davis (W. H. Florrell) (May 2) The cool weather which has prevailed since the early spring drought was broken has slowed down considerably the early rapid development of the cereals. However, barley, wheat, and oats are in advanced stages of heading. Nearly all varieties in the early-sown barley classification nursery are fully headed, while only a few rows of the later nursery barleys have begun to head. Early varieties of wheat are fully headed and others are coming along rapidly. Many of the winter varieties in the classification nursery have not begun heading. Varieties of oats are fully headed.


A very much increased plant growth has occurred during the past few weeks. Commercial fields are responding to the favorable weather and the crop prospect is much brighter than a few weeks ago.

Agricultural Experiment Station, Berkeley (Fred M. Briggs) (May 4) Last Saturday I attended the annual picnic at the University Farm and held a smut demonstration. The demonstration was well attended and the farmers appeared to be considerably interested in the copper-carbonate treatment.

The smut nursery looks very good again this year, and much interesting data should be obtained. The various seed treatments appear to have controlled the bunt in wheat, but there is not such a marked stimulation this year. The experiments in the greenhouse bear out this observation. There is a marked increase, however, in growth where copper carbonate is used, as compared with the untreated seed.

In a day or two I shall have completed another semester of post-graduate study.

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CEREAL COURIER

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Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

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No. 11

Personnel (May 11-20) and Field Station (May 1-15) Issue.

PERSONNEL ITEMS.

Dr. C. R. Ball, cerealist in charge, has contributed the text of the genus *Salix* to the first volume of the Illustrated Flora of the Pacific States, by L. R. Abrams, issued under preface date and inscription date of May 15, 1923.

John L. Federer was appointed Unskilled Laborer May 16 to assist J. C. Brinsmade, Jr., in the flax experiments conducted at the Northern Great Plains Field Station, Mandan, N. Dak.

Dr. H. B. Humphrey, pathologist in charge of cereal-disease investigations, left Washington May 20 to inspect the progress of cereal-disease investigations and consult with officials of agricultural experiment stations in the States of Tennessee, Illinois, Missouri, Indiana, Wisconsin, Minnesota, North Dakota, South Dakota, Iowa, Kansas, Colorado, Arizona, California, Oregon, Washington, and Idaho. He will be in travel status until July 15.

Dr. A. G. Johnson, pathologist in charge of the investigations of diseases caused by imperfect and sac fungi, left Washington May 22 to inspect fields of wheat in North Carolina infected with "take-all." Fresh specimens of diseased wheat found at Lincolnton, N. C., were received by Doctor Johnson from the North Carolina Agricultural Experiment Station. They show typical symptoms of true Australian "take-all," namely, retarded spindly growth with marked yellowing and dying of plants, and blackening of basal portions, together with black mycelial "plate" on the culm inside of basal sheath. Mature perithecia of the causal organism, *Onthobolus graminis* Sacc., were found on the specimens by Doctor Johnson, thus making the identification of the disease certain. According to Dr. F. A. Wolf, plant pathologist, Raleigh, N. C., the wheat was "dying in spots" in the field under observation, this condition also being characteristic of the disease, which has now been authentically reported from the following eight States: New York, North Carolina, and Virginia, in the east; Arkansas, Indiana, and Kansas, in the interior; and Oregon and Washington, in the west.

Miss Sarah E. Johnson, typewriter, in the Office since February 12, resigned May 11, her appointment being terminated on that date.

Charles L. Judson, of Whittier, Calif., was appointed Field Assistant May 16 to assist Victor H. Florell in the cereal experiments conducted in cooperation with the California Agricultural Experiment Station at Davis, Calif.

Dr. F. E. Kempton, pathologist in charge of barberry eradication, and N. R. Carmichael, assistant pathologist in barberry eradication, returned May 21 from a two-day field trip through Baltimore, Montgomery, Frederick, and Washington counties, Maryland, and Cumberland, Franklin, Adams, York, and Lancaster counties, Pennsylvania. Doctor Kempton reports that no infection of black stem rust on cereals was observed.

Common barberry bushes were found in many of the cities and villages visited and occasionally on farms. Many barberries, both escaped and cultivated, are to be found on the farms immediately surrounding Shippensburg, Pa. Attempts have been made to eradicate some of these but as many of the escaped bushes were located on rocky soil sprouts were appearing from the crowns of the bushes cut down during the past summer. Heavy infection in the pycnial stage and a few open cluster cups were observed on the barberries around Shippensburg. Some of these bushes were near grain fields, but no stem rust had appeared on the grains or grasses nearby. Bushes on lawns, as a rule, did not show infection. Barberry bushes escaped from cultivation located on a farm 6 miles east of Lancaster, Lancaster County, Pa., were growing on a hillside within a few feet of wheat fields. They showed only light infection in the pycnial stage. No rust was found on the wheat.

Observations made for the appearance of leaf rust showed a few pustules on the lower leaves of winter wheat, in York and Adams Counties, Pa., and Baltimore County, Maryland.

The winter wheat observed appeared to be in excellent condition except for an occasional thin stand on stalk ground or in fields where water probably had stood during the winter.

Dr. F. E. Kempton, pathologist in charge of barberry eradication, will leave June 2 for Madison, Wis., to take part in a field trip from June 4 to 7 with Noel F. Thompson, pathologist in charge of the investigation of chemical methods of destroying barberries. They will be accompanied by the State leaders from Ohio, Indiana, Michigan, Illinois, Wisconsin, Minnesota, South Dakota, and Iowa; Donald G. Fletcher, agent in collaboration with the Conference for the Prevention of Grain Rust; and Messrs. Harrison Fuller and Carl Hanton of the Conference for the Prevention of Grain Rust. The purpose of the trip is to check up on the effectiveness of the use of salt and sodium arsenite as chemical agents for killing barberries and to demonstrate to the State leaders the proper methods of instructing their field men and property owners in the use of these chemicals. The party expects to inspect areas of escaped bushes or large hedges previously treated, near the following places: Madison, Black Earth, Richland Center, Prairie du Chien, Glen Haven, Milton Junction, and Jefferson, Wisconsin; McGregor, Iowa; Galena, Huntley and Gurnee, Illinois. Doctor Kempton and Mr. Thompson also expect to inspect areas in Michigan and Ohio containing barberry bushes to study the relations of escapes to soils, to advise the State leaders as to methods of eradication, and to note the effect of various chemicals used in treatments last autumn.

Dr. C. E. Leighty, agronomist in charge of eastern wheat investigations, will attend a conference of State and Federal officials at Granite City, Ill., May 25, to discuss the problem of flag smut of wheat. This conference has been called by P. A. Glenn, Chief Plant Inspector of the Illinois State Department of Agriculture, and will be attended by Doctors H. B. Humphrey, C. E. Leighty and W. H. Tisdale and Miss Marion A. Griffiths, of this Office, and Dr. K. F. Kellerman, Associate Chief of the Bureau of Plant Industry; also by representatives of the State agricultural experiment stations of Illinois, Missouri, Kansas, and Kentucky and the Illinois State Department of Agriculture.

Doctor Leighty also will visit the Missouri Botanical Garden at St. Louis, Mo., where Miss Griffiths is conducting cooperative research on the flag smut of wheat; and will inspect the wheat experiments carried on in cooperation with the agricultural experiment stations at Knoxville, Tenn., and Athens, Ga.

Frederick D. Richey, agronomist in charge of corn investigations, returned May 21, having conferred with Station officials and others regarding the cooperative corn experiments under way at Ames, Iaw, Manhattan, Kans., Akron, Colo., and North Platte, Nebr.

T. E. Stanton, agronomist in charge of oat investigations, writes of the satisfactory condition of winter wheat and oats in the Statesville section of North Carolina. At Raleigh, Red May (Purple straw) wheat was beginning to ripen. Increased interest in cotton growing is evident in North Carolina, probably because of the belief that the ravages of the boll weevil would cause a marked decrease in the acreage in the more southern area of the cotton belt.

Among the outstanding features at the farms of the Pedigree Seed Company, Hartsville, S. C. were several very uniform and early strains of Fulghum oats, which had been isolated. Calcutta, an early oat of the Red Rustproof type, sent to Hartsville by the Office of Cereal Investigations was the earliest to head of the spring-sown varieties. It is believed that this oat may prove of value for the South.

At the Pee Dee Substation, Florence, S. C., Fulghum oats were about half ripe. Corn planted by C. H. Kyle had emerged and showed a good stand.

Oats are poor in southern Georgia this year. Leaf rust apparently has affected the crop more severely than for a number of years. Fulghum, the variety grown almost exclusively in the vicinity of the Coastal Plain Station at Tifton, Ga., was particularly affected by leaf rust, which caused it to lodge and ripen prematurely. Winter wheat at the Station also was poor. The Georgia Red variety appeared to be the most promising. Winter grains at Athens look good and only a little rust is present. Farmers are complaining of too much rain. Throughout the southeastern States cotton apparently is in a backward condition because of the cold spring weather.

MANUSCRIPTS AND PUBLICATIONS.

A manuscript entitled "Common Barberry and Black Stem Rust in Ohio," by John W. Baringer, State Leader of Barberry Eradication in Ohio, and W. G. Stover, of the Department of Botany, Ohio State University, was approved May 15 for publication as an extension bulletin of the Ohio State University.

Galley proof of Department Bulletin 1162, entitled "The Rôle of the Genus Rhizinus in the Dissemination of Crown Rust," by S. H. Dietz, was read May 9.

Galley proof of article entitled "A Statistical Study of the Comparative Morphology of Biologic Forms of Puccinia graminis," by M. N. Levine, scheduled for publication in the Journal of Agricultural Research, was read May 12.

Galley proof of article entitled "A Method of Treating Maize Seed to Destroy Adherent Spores of Downy Mildew," by William H. Weston, Jr., for publication in the Journal of Agricultural Research, was read May 12.

Galley proof of article entitled "The Influence of Temperature on the Spore Germination of Ustilago zeae," by Edith Seymour Jones, scheduled for publication in the Journal of Agricultural Research, was read May 14.

Page proof of Department Bulletin 1155, entitled "Rice Experiments on the Biggs Rice Field Station in California," by Jenkin W. Jones, was read May 13.

The article entitled "Occurrence of Bunt in Rye," by E. F. Gaines and F. J. Stephenson, was published in Phytopathology, v. 13, no. 5, p. 210-215. May, 1923.

The article entitled "Influence of Soil Temperature and Moisture on the Development of the Seedling-Blight of Wheat and Corn Caused by Gibberella saubinetii," by James G. Dickson, was published in the Journal of Agricultural Research, v. 23, no. 11, p. 837-870. March 17, 1923. Number 11 of the Journal was received May 14.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens, (R. R. Childs) (No report)

VIRGINIA

Arlington Farm, Rosslyn (J. W. Taylor) (May 14) All varieties of barley and all rye varieties, with the exception of Rosen, are now fully headed. The earlier varieties of oats, such as Fulghum and Kanota, are rapidly pushing from the boot. Purplestraw wheat sown September 15 is beginning to head and that sown on the usual dates, October 5 to 10, probably will head this week. The cold spell of last week evidently delayed the flowering of the barley varieties, as well as the ryes, for on the first warm day following, flowering was general in varieties which normally flower several days apart.

The wind and rain of the past few days caused heavy lodging in rye particularly in the red-row nursery. It now appears unlikely that the culms will straighten, in which case but little seed can be expected.

The barley yields should be above average. A few of Doctor Harlan's new selections, in plat test for the second year, continue to show excellent promise. Orel, the only 2-row barley yet tested in the varietal experiment that shows promise of high yield, should rank with the leaders for 1923.

As yet leaf rust has made little start on wheat or rye. A few infected plants were noticed in the early sown Purplestraw plats. Loose and covered smuts are present to a small extent in the varietal barleys, which were treated with formaldehyde.

On May 9 and 11, respectively Mr. Willier planted Yellow Pearl and White Rice popcorn in the breeding plat; on May 12, various varieties and crosses of popcorn were planted in the observation plat,

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (E. H. Love)
(No report)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (No report)

Louisiana Agricultural Experiment Station, Baton Rouge (E. Stoneberg)

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (May 15)
The May 1 condition of Missouri crops is reported as follows by the State Board of Agriculture and the Federal Bureau of Crop Estimates: Wheat 87 per cent; rye 91 per cent; oats 78 per cent; hay 86 per cent; pastures 81 per cent. Wheat was damaged somewhat by the March freezes and in the southeastern part of the State by later rains. Over the State as a whole wheat improved considerably during April. Chinch bugs have begun to fly in several parts of the State and are expected to be considerably worse than usual this year because of the mild winter. The low condition of oats is due largely to the killing of most of the early-sown crop by freezes in March.

Corn planting is now almost completed. In the southern part of the State many corn fields already have been cultivated once.

The last 3 or 10 days have been exceptionally cool, in fact, we have had some light frosts during the past week. The last few days have been cool and wet, and we are likely to have some poor stands of corn as a result.

On May 4 to 9 we planted corn on the Station field. We are growing considerably more corn than usual this year. In addition to Doctor Eyster's genetic plants and my breeding corn, Doctor Etheridge has a rather extensive planting of corn for chinch bug investigations, and Mr. Branstetter is growing something over an acre of corn for root-rot work. All of this corn has been planted.

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (No report)

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins) (No report)

Iowa State College, Ames (Barberry Eradication, J. H. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (No report)

Post Office Building, Urbana (Barberry Eradication, G. C. Curran)
(No report)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette, (Corn Root Stalk, and Ear Rots, G. N. Hoffer) (No report)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Maine) (No report)

Purdue University, College of Agriculture (Barberry Eradication, H. E. Beeson) (No report).

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, John W. Baringer) (No report).

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy)
(No report)

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, William W. Walker) (No report)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. A. Melander) (No report).

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger) (May 16) There was a measurable quantity of precipitation on 12 out of the first 15 days of May. This has tended to low temperatures and poor conditions for germinating sorghum or broomcorn. The sorghums in the second date-of-seeding plots emerged to fair stands by the 10th and 11th, having been seeded on May 1. Because of the wet condition of the soil the third date-of-seeding has not been seeded yet. It is doubtful if it can be seeded to-day.

As soon as conditions are favorable, kafir in the rate-of-seeding experiments, and in the early nursery will be seeded in addition to the date-of-seeding plots. A fair-sized field has been assigned to the writer on which to grow a large number of sorghum hybrids for field trial. The field in question will contain 144 rows and will be seeded mainly to F₃ generation material.

Maximum temperature for May to date, 91° on the 10th; minimum, 39° on the 15th; precipitation for the month to date, 2.50 inches.

KANSAS

Agricultural Experiment Station, Manhattan (John E. Parker) (No report)

Hays Branch Experiment Station, Hays (E. D. Dayles) (No report).

COLORADO

Alron Experiment Farm, Alron (F. A. Coffman) (May 16) Weather conditions during the past half month have been very favorable for growing cereals. Several showers have delayed field operations to some extent, but their value to the cereals easily offset the inconvenience experienced.

The winter grain prospects have improved to some extent with the advance of the season. From the recently completed data on stands fair yields may be expected from many of our field plats. The stands in many plats are equal to those which have given yields of between 12 and 15 bushels in previous seasons.

Prospects are very bright for spring grains. Excellent stands were obtained in most of the plats and rows of spring cereals. The outlook is better than that for winter grain.

The first corn on the Farm was planted May 12. With favorable weather conditions most of the corn on the Farm will very likely be planted before the end of next week.

F. D. Richey, agronomist in charge of corn investigations, was here from May 10 to 15. During his stay the corn experiments were outlined and the seed prepared for planting. One plat of nearly 300 rows was planted for selfing purposes.

Agricultural College, Ft. Collins (Barberry Eradication, F. A. Lungren) (No report).

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel) (No report).

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter).

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Hutton) (No report).

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel) (No report).

Agricultural Experiment Station, Agricultural College (Barberry Eradication, Geo. C. Mayoue) (No report).

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.) (May 16). The weather during the first half of May has been generally favorable for field work, although low temperatures have prevailed. Field work was somewhat delayed by a light fall of snow and rain May 7.

Flax sown May 1 in the date-of-seeding experiment emerged about May 10. There was no apparent injury from frost to flax showing above ground, although a small percentage of the plants was apparently killed by frost just below the surface of the soil.

Wheat in the varietal planting sown April 27 emerged about May 5, and oat and barley varieties sown April 28, emerged about May 7.

The flax and cereal mixtures were sown May 2. The seed was mixed in the different proportions before sowing, and the drill was carefully calibrated for each mixture. The flax and wheat emerged at about the same time May 12, and the oats about a day later.

The wheat-rust biologic form nursery and the F_4 hybrids in red rows were sown May 4. The F_3 wheat hybrids spaced 3 inches apart were sown May 4 and 5. The drilled rows emerged about May 12 and the hand-seeded rows about May 14, with good stands.

The flax varietal plats were sown May 12.

Maximum temperature for the first half of May, 77 degrees, May 5; minimum 23, May 7; precipitation 0.22 in.

Dickinson Substation, Dickinson (Ralph W. Smith) (May 15) During the first half of May the weather has been cold and rather dry with about 0.30 inch of rain. Soil moisture conditions are good, however, except that the surface is becoming dry. Several killing frosts have occurred during the past week with a minimum temperature of 22 degrees. An early seeding of flax was just emerging and was injured slightly by the freezing.

Practically all the wheat, oats, and barley in the cereal plats and nursery has emerged, with apparently good stands. Sixteen varieties of corn were check-rowed on May 14, planting two rows of each variety about 40 rods long and using Gehu flint every fourth variety as a check. An environmental experiment begun last year was planted again with seed of Northwestern Dent obtained from different sources. Hybrid seed obtained by crossing two high-ear strains of Northwestern Dent at this Substation, was planted for comparison with ordinary seed of the parent variety. About 100 strains and selections of corn will be planted in rows for study and self-fertilization in an effort to produce a better corn for this climate.

A new experiment was begun with flax, combining a date-of-seeding test with a study of different methods of soil treatment for weed control. The first seeding was done April 21, and seedings have been or will be made on the first and fifteenth of each month up to June 15. Duplicate plats are sown on corn land and on wheat land, some being double disked and others plowed, the latter being packed with disk harrow, cultipacker, or subsurface packer. Other plats are cultivated at semimonthly intervals with the spring tooth harrow and seeded on the first and fifteenth of each month.

The flax-wheat-mixture experiment was sown May 5. Marquis wheat was sown at the approximate rates of 10, 20, and 30 pounds per acre with Reserve flax at two rates, 15 and 25 pounds per acre; also wheat and flax were sown alone at the usual rates. Each method was sown in duplicate. Eleven varieties of flax were sown in the regular varietal plats in triplicate.

There is considerable interest in flax growing this spring. Flaxseed is scarce and in demand. The flax acreage probably will be doubled this year.

The seeding of wheat is nearly finished in this vicinity, the acreage being as large as or possibly larger than last year. A considerable quantity of oats and barley has been sown and some corn and potatoes planted.

Stand counts have been made with all the winter grain in plats and nursery. Winter-wheat varieties drilled in grain stubble came through the winter in fairly good condition while duplicate plats drilled in standing corn were badly winterkilled. In a nursery of over 2,000 8-foot rows, that portion sown on fallow was entirely winterkilled while that drilled in short stubble suffered severe killing. Enough of the latter survived to produce seed for further selection and to show differences in hardiness of the different hybrids.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May) (May 14) The dry weather during the past two weeks has been very unfavorable for much of the winter wheat under the Cereal Project. Farmers also report that much of winter wheat is dying. Light showers during the last four days may revive much of the wheat.

It now appears that there will be a very poor stand of winter wheat in the ordinary drill plats of the furrow-drill-ordinary-drill experiment while the furrow-drill plats appear in at least fair condition. The winter-wheat nursery as a whole has come through in good condition, although the hybrid winter-wheat nursery is spotted.

All of the spring seeding has been finished except the corn variety test and the rate-and-date-of-planting corn experiment. Corn planting has been delayed because the teams were busy at other work. It is hoped to plant the corn before the close of this week, however.

Total precipitation since the first of May, 0.32 of an inch. All of this has fallen as light showers during the last four days. It is snowing and raining today (May 14). Maximum temperature since the first of the month, 75 degrees, May 10; minimum, 19 degrees, May 14.

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe) (No report)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (No report)

CALIFORNIA

Elmer Rice Field Station, Bixas (J. W. Jones) (May 15) During the past two weeks the weather has been favorable for germination and growth of rice. Rice sown broadcast and submerged April 25 is just emerging through the water. Rice drilled or broadcast from April 25 to 30 and then irrigated and drained has practically all emerged, but it is too early to estimate the probable stands.

We have finished seeding except for the last date in a date-of-seeding experiment.


University Farm, Davis (V. H. Flossell) (No report)

Agricultural Experiment Station, Berkeley (Fred N. Briggs) (No report).

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations.
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)



Vol. 15

May 31, 1923
Personnel (May 20-31) and Project Issue.

No. 12

SPECIAL CONTENTS.

Economy in expenditure of Government funds.
Results of flag-smut conference at Springfield, Ill.
A short method for calculating the probable error
of a mean.

PERSONNEL ITEMS.

Boyd R. Churchill was appointed field assistant June 1 to assist in the cooperative experiments with cereals at the Akron (Colo.) Experiment Farm, under the direction of F. A. Coffman.

W. T. Craig, agent in the cereal investigations conducted in cooperation with the Cornell University Agricultural Experiment Station, will leave Ithaca June 1 for Davis, Calif., to take notes on and supervise the harvesting of the wheat hybrids that are being grown there. Mr. Craig also will inspect other cereal experiments and confer with experiment station officials in Arizona, California, Utah, Colorado, Nebraska, Iowa, Illinois, and Michigan.

A. C. Dillman, agronomist in charge of flax investigations, will leave June 9 to consult with officials of the agricultural experiment stations of Minnesota and North Dakota concerning the growing of flax. He also will study methods of flax production and the progress that has been made in the promotion of flax culture in North and South Dakota, Montana, Wyoming, Minnesota, Iowa, and Wisconsin. At Mandan, N. Dak., Mr. Dillman will inspect the field and nursery experiments with flax conducted in cooperation with the North Dakota Agricultural Experiment Station at the Northern Great Plains Field Station. He will be in the field all summer.

Miss Myrtis V. Hall, stenographer and typist, resigned from the service at the termination of May 25.

Miss Mae I. Kivlin, stenographer and typist, was transferred to the Bureau of the Biological Survey May 25.

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John H. Martin, agronomist in western wheat investigations, left May 31 to study cereal experiments and confer with agricultural experiment station officials in Missouri, Texas, California and Oregon. He will be in the field for about three months.

Dr. C. E. Leighty, agronomist in charge of eastern wheat investigations, returned late on May 30 from Granite City, Ill., where he attended the conference on flag smut held May 25. The experiments at the Missouri Botanical Garden were also inspected. Some winterkilling has taken place, especially of spring wheats and non-hardy varieties sown last fall in the hope that data on them could be obtained. A few varieties heretofore immune showed some infection, but most of those immune in previous years were again free from smut. The conference at Granite City was attended by representatives from Illinois, Missouri, Arkansas, and Indiana and also by several from the Bureau of Plant Industry.

On May 29 a committee appointed at the Granite City meeting met at Springfield, Ill., in the office of B. M. Davison, Director of the Illinois State Department of Agriculture. At this meeting an agreement covering future work on flag smut in Illinois was drawn up which appears in full elsewhere in this number of the Courier.

J. Milford Raeder, assistant plant pathologist at the Idaho Agricultural Experiment Station, and agent in the cooperative cereal experiments, left May 26 to visit points in Mexico, New Mexico, Texas, Colorado, and Utah to ascertain the possible relation of stripe rust, which is epidemic in Mexico, to the occurrence of the same disease in the States named.

George F. Sprague was appointed field assistant June 1 in the cooperative experiments with corn and cereal crops at the North Platte (Nebr.) Field Station.

T. R. Stanton, agronomist in charge of oat investigations, returned from the South May 28. He reports that westward from Atlanta through Alabama, Mississippi, and northeastern Texas the oat crop in general was in good condition. Fulghum oats were being harvested in the experimental plats at Auburn, Ala., and Alabama Bluestem wheat was about half ripe. In northern Mississippi wheat growing practically has been abandoned because of rust. In the same region, anthracnose is threatening the culture of rye. Generally throughout the lower cotton belt, numerous heavy rains, followed by rather low temperatures, have greatly retarded the growth of cotton but, on the other hand, have been rather favorable to small grains. The migration of colored laborers to northern industries apparently is creating a labor shortage in many sections of the South, particularly where cotton is grown on a large scale.

Wheat and oats in northeastern Texas generally are promising. If rust does not develop, very satisfactory yields of these grains will be harvested. In the varietal experiments on the Denton Substation, strains of fall-sown Red Rustproof oats may yield from 30 to 90 bushels per acre.

In western Tennessee Mr. Stanton noted winter wheat in only fair condition. Fall sown oats looked quite promising, but not many fields were seen. In the region of Lexington, Ky., the condition of winter wheat was fair to good. Fall-sown oats of the hardier varieties on the Kentucky Agricultural Experiment Station apparently had survived the winter in good condition. Tennessee Winter barley, of which a considerable acreage is grown in that section, looked very promising.

VISITORS.

Carlos Camacho, Ingeniero Agronomo, Director de la Estacion de Patologia Vegetal i de los Servicios de Policia Sanitaria Vegetal, Santiago de Chile, was an Office visitor during the week of May 28.

M. A. Gray, chief chemist of the Laboratory and Baking Department of the Pillsbury Flour Mills Co., Minneapolis, was an Office visitor May 29.

Holgar Johansen, agronomist in charge of the agricultural work of the Canal Zone, with headquarters at Balboa Heights, visited the Office May 21. Mr. Johansen is a cooperator with several offices of the Bureau of Plant Industry.

John L. Kellogg, First Vice President and Secretary of the Kellogg Company, Battle Creek, Mich., called at the Office May 25.

Dr. O. F. E. Winberg, of Silverhill, Ala., a cooperator of this Office in growing rice without irrigation, was a visitor May 18.

Ikuo Yahiro, an engineer devoting his time to the study of the water requirements of the rice plant for the Department of Agriculture, Government General of Chosen, Japan, was an Office visitor May 16.

MANUSCRIPTS AND PUBLICATIONS.

An article entitled "Acidity of Corn and its Relation to Vegetative Vigor," by Annie May Hurd, was transmitted May 26 for publication in the Journal of Agricultural Research.

Galley proof of article entitled "Relation of Certain Soil Factors to the Infection of Oats by Loose Smut," by Lucille K. Bartholomew and Edith S. Jones, for publication in the Journal of Agricultural Research, was read May 23.

Galley proof of Journal article entitled "Biologic Forms of Puccinia graminis on Varieties of Avena spp.," by E. C. Stakman, M. N. Levine, and D. L. Bailey, was read May 29.

Page proof of article entitled "Influence of Temperature, Moisture, and Oxygen on Spore Germination of Ustilago avenae," by Edith S. Jones, scheduled for publication in the Journal of Agricultural Research was read May 22.

Page proof of article entitled "Spores in the Upper Air," by E. C. Stakman, A. W. Henry, G. C. Curran, and W. N. Christopher, for publication in the Journal of Agricultural Research, was read May 23.

Page proof of article entitled "Studies on the Life History of Stripe Rust," by Charles W. Hungerford, for publication in the Journal of Agricultural Research, was read May 23.

Page proof of article entitled "The Influence of Temperature on the Spore Germination of Ustilago zeae," by Edith Seymour Jones for publication in the Journal of Agricultural Research, was read May 26.

The article entitled "A New Method of Self-Pollinating Corn," by Merle T. Jenkins, was published in The Journal of Heredity, v. 14, no. 1, p. 41-44, fig. 17-18. April, 1923. The number was received May 23.

ECONOMY IN EXPENDITURE OF GOVERNMENT FUNDS.

The following memorandum from Dr. Wm. A. Taylor, Chief of the Bureau of Plant Industry, dated May 21, will be of interest to all readers of the Cereal Courier:

May 21, 1923.

MEMORANDUM FOR HEADS OF OFFICES.

Gentlemen:

I would like to call to your particular attention the following memorandum, under date of May 19, 1923, which has been received from the Secretary:

"So far this fiscal year we have made a good record in wise economy in the expenditure of Government funds. The personal interest which so many of our people have taken in the effort to economize has been most gratifying. During the remaining six weeks of this fiscal year I am anxious that we should keep up the pace we have set. No doubt there are certain funds under your supervision which will not need to be fully expended. A careful examination of the finances of your bureau may disclose ways by which you can make a number of small savings and add to the money which can be turned back to the Treasury. I hope you will do this wherever possible.

You understand, of course, that I am not urging economies at the expense of efficiency or the impairment of important work. That would not be real economy. What I am urging is that we avoid spending any money which it is not really necessary to spend.

In addition to the saving of money which has resulted from our efforts during the past year, I feel very strongly that the attention which has been directed to the need for economy has been a wholesome thing for all of our people.

In sincere appreciation and feeling sure that I will have your whole-hearted cooperation, I am

Very truly yours,

Henry C. Wallace,
Secretary."

With the Secretary, I believe that our employees generally feel very strongly on the matter of economy in the expenditure of funds, and carry out their views in practice. I wish to join with the Secretary in commending the excellent spirit shown in this direction, and the accomplishments that have been made, and to urge that in every practicable way we continue to expend government funds with the greatest of care.

Very sincerely,

Wm. A. Taylor
Chief of Bureau.

RESULTS OF FLAG-SMUT CONFERENCE AT SPRINGFIELD, Ill.

At a conference held in the office of the Director of the State Department of Agriculture, at the Capitol Building, Springfield, Illinois, on May 29, at 10 o'clock A. M., the following were present; B. M. Davison, Director of Agriculture; O. T. Olsen, Superintendent of Plant Industry; P. A. Glenn, Chief Inspector of Plant Industry; Prof. J. C. Hackleman, Farm Crop Extension of the University of Illinois; C. E. Leighty, Agronomist, U. S. Department of Agriculture, and the following Farm Advisers; Alfred Tate, Monroe County; B. W. Tillman, St. Clair County; R. L. Eyman, Jersey County; Alfred Raut, Madison County, and I. A. Madden, Sangamon County.

Dr. Leighty acted as Chairman and after a full discussion of the situation, the following suggestions, recommendations and rules were agreed upon by the several departments and organizations so represented:

Illinois State Department of Agriculture:

First - Will recommend the sowing of resisting varieties of wheat, especially the Trumbull variety as a smooth wheat and the Fulcaster as a bearded wheat.

Second - Will make a general and special survey of the State as regards flag smut and report its findings.

Third - Will regulate the shipment of straw from known infested areas.

Fourth - Will recommend copper carbonate seed treatment, using wheat-treating machines.

Fifth - Will purchase \$2,000 worth of copper carbonate or so much thereof as may be needed for distribution within the area and for treating seed wheat; also will purchase 8 machines for the treating of seed wheat, will purchase 800 bushels of resisting varieties of wheat, two of which shall be bearded and two smooth, to be sown on experimental plots within the infested area, same to cost approximately \$1,200.

Sixth - Will purchase the crop of Shepherd wheat grown near Granite City on about 6 acres, which crop is to be used for experimental purposes.

Seventh - Will enlist the cooperation of millers and elevator managers.

University of Illinois and U. S. Department of Agriculture agreed: -

First - To furnish present information regarding varieties and their desirability.

Second - To assemble and distribute further information regarding varieties.

Third - To compile and distribute lists of farmers having desirable pure seed.

Fourth - To furnish information regarding seed treatment.

Fifth - To make general recommendations regarding crop sanitation and crop rotations.

Sixth - To enlist the cooperation of millers and elevator managers.

Farm Advisers:

First - To hold meetings and acquaint members with the problem and its control, using slides, etc.

Second - To transmit all information furnished.

Third - To assist in pooling orders for seed wheat.

Fourth - To enlist the cooperation of millers and elevator managers.

Fifth - To assist and cooperate with the State Department of Agriculture, the University of Illinois and the U. S. Department of Agriculture in completing arrangements for experimental plots.

Sixth - To assist the State Department of Agriculture in the distribution and use of the copper carbonate and wheat-treating machines.

A SHORT METHOD FOR CALCULATING THE PROBABLE ERROR OF A MEAN.

The following method for calculating the probable error of a mean is adapted from the suggested "Short Method of Obtaining a Pearson Coefficient of Correlation and Other Short Statistical Methods," by F. M. Phillips, in Monthly Weather Review 50: 135-136. 1922.

It is for use in connection with the formula,

$$\text{Error of mean} = \pm 0.6745 \sqrt{\frac{Sd^2}{n(n-1)}}$$

in which Sd^2 is the sum of the squared deviations from the mean, and n is the number of replicates. Both the regular and the short method are illustrated below.

Replicate	Value	Deviation	Deviation squared	Value squared
1	11.9	+0.7	0.49	141.61
2	10.5	-0.7	0.49	110.25
3	9.4	-1.8	3.24	88.36
4	11.3	+0.1	0.01	127.69
5	13.0	+1.8	3.24	169.00
Sum	56.1	+0.1	7.47	636.91
Mean	11.22		Mean ² x n =	629.4420
			Difference	7.4680

The correction factor for the sum of the squared deviations from the assumed mean (11.2) is the mean of the algebraic sum of the deviations, squared, and multiplied by the number of replicates, i. e.,

$$\left(\frac{0.1}{5}\right)^2 \times 5 = .0020.$$

This subtracted from 7.47 gives the sum of the squared deviations from the true mean or 7.4680.

This value is the same as that obtained by squaring the values themselves, adding these squares and subtracting the squared mean multiplied by n . The latter method saves the annoying labor of determining the many small deviations, labor which to the writer is fraught with chances of error because of the very simplicity of the operations.

It should be noted that when the mean does not come out even it should be carried out one full place farther for squaring and multiplying by n , than is felt necessary for its use as a mean. Thus, in the example above, using 11.2 in the correction in place of 11.22 would give a probable error of ± 0.472 in place of ± 0.411 .

The rest of the operation is the same in either case:

$$0.6745 \sqrt{\frac{7.4680}{5 \times 4}} = 0.411$$

If only one mean is being considered, it is perhaps as easy to compute the error as indicated. If a number of errors involving the same n are being computed, however, time can be saved by first computing the value of

$0.6745 \sqrt{\frac{1}{n(n-1)}}$ (if no table for these values is available), and multiplying the factor obtained by the square roots of the different Sd^2 successively.

PROJECT REPORT

WESTERN WHEAT INVESTIGATIONS.

(J. Allen Clark, Agronomist in Charge)

Milling and Baking.

Milling and baking experiments have been conducted in cooperation with the Milling Investigations Section of the Bureau of Agricultural Economics, as in previous years. Determinations have been made on 320 samples of varieties and selections. The stations from which these samples were obtained, with the number from each, are: Davis, Calif., 20; Moro, Oreg., 26; Lind, Wash., 11; Pullman, Wash., 21; Aberdeen, Idaho, 8; Bozeman, Mont., 6; Moccasin, Mont., 40; Dickinson, N. Dak., 39; Mandan, N. Dak., 16; Fargo, N. Dak., 14; Redfield, S. Dak., 6; Manhattan, Kans., 40; Hays, Kans., 17; Ashland, Wis., 11; Sheridan, Wyo., 15; and Akron, Colo., 30. Over 100 samples still remain to be tested.

A MacMichael viscosimeter has been installed in the Cereal Investigations laboratory for determining the quality of wheat selections before sufficient seed is available to allow milling and bread-making tests.

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations.
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15 June 10, 1923.
(Personnel (June 1-10) and Field Station (May 20-31) Issue.)

No. 13

PERSONNEL ITEMS.

Fredrick E. Blaine was appointed Field Assistant June 4 to assist in nursery and field experiments at Arlington Experiment Farm.

Elmo A. Briggs, of Albion, Nebr., has been appointed Field Assistant, effective June 20, to assist in the cooperative cereal investigations conducted on the Judith Basin Substation, Moccasin, Mont.

J. Allen Clark, agronomist in charge of western wheat investigations, will leave June 16 to visit field stations of the Bureau of Plant Industry in Minnesota, Kansas, Colorado, Wyoming, Nebraska, and North Dakota, to inspect cereal experiments, especially wheat; to study wheat classification nurseries; and to make observations on the condition of the wheat crop in the western part of the country.

John R. Fitzsimmons reported in Washington June 10 to spend a month in conference with officers in charge of barberry eradication and to assemble and tabulate data preparatory to the opening of the barberry eradication campaign in Ohio, where he will have headquarters for the season at Columbus.

Minter P. German was appointed Field Assistant June 11 to assist Dr. C. E. Leighty in the cereal nursery and field experiments at Arlington Experiment Farm.

Dr. C. E. Leighty, agronomist in charge of eastern wheat investigations, left June 10 for Knoxville, Tenn., to meet Dr. E. B. Mains, of La Fayette, Ind., agent in the leaf rust investigations conducted in cooperation with the Purdue University Agricultural Experiment Station, for the purpose of taking notes and making selections in the extensive series of wheat hybrids grown in cooperation with the Tennessee Agricultural Experiment Station. Doctor Leighty will return to Washington about June 17, while Doctor Mains will spend about two weeks in studies of the segregation and selection of wheat hybrids with special reference to leaf-rust resistance.

John E. Martin, agronomist in western wheat investigations, was granted permission June 7 to carry graduate study in plant breeding at the University of Minnesota during the school year 1923-1924.

Arrangements were made June 8 with the Veterans' Bureau to give Mr. Romjue, of Missouri, training in methods of cereal experimentation at the Arlington Experiment Farm during the summer quarter preparatory to his entering the University of Maryland next fall. Mr. Romjue began work June 9.

Miss Gladys V. Ross was appointed June 1 as clerk to the State Leader of barberry eradication at Ames, Ia.

Bruce Vazeille was appointed Field Assistant June 7 to assist in the cereal investigations and experiments conducted in cooperation with the California Agricultural Experiment Station at Berkeley.

VISITORS

Rev. Dr. Y. T. Chu, a Chinese clergyman of the Diocese of Hankow, China, was an Office visitor during the week of June 4. He is especially interested in the culture of rice, cotton, and wheat, and has been given letters of introduction to field representatives of the Bureau of Plant Industry in order that he may learn something of American methods and practices in the growing and handling of these crops.

Leslie A. Fitz, of the Fleischmann Laboratories of New York City, called at the Office June 2.

L. M. Jeffers, formerly of the Division of Grain Investigations, Bureau of Markets, and now with the California State Department of Agriculture, called at the Office during the week of June 4.

Harry Umberger, Dean and Director of the Division of Extension, Kansas State Agricultural College, Manhattan, Kans., was an Office visitor June 9.

C. C. Wang, Advisor of Foreign Affairs to the Viceroy of Manchuria, conferred with members of the Office June 9 on agricultural practices in the United States and the possibility of using American material in Manchuria.

MANUSCRIPTS AND PUBLICATIONS.

A paper entitled "Barberry Eradication in Illinois," by F. E. Kempton, G. C. Curran, and E. D. Griffin, was approved June 5 for publication in the annual volume of the Proceedings of the Indiana Academy of Science.

Galley proof of Farmers' Bulletin 1340, entitled "Polish and Poulard Wheats," by John H. Martin, was read June 5.

Page proof of article entitled "A Method of Treating Maize Seed to Destroy Adherent Spores of Downy Mildew," by Wm. H. Weston, Jr., for publication in the Journal of Agricultural Research, was read June 6.

NOTICE TO EMPLOYEES IN THE FIELD AND IN TRAVEL STATUS.

Notice is hereby given that transportation requests issued for use during the fiscal year beginning July 1, 1922, and ending June 30, 1923, must not be used after June 30, 1923, and that all unused requests must be returned to this Office as soon as possible after June 30.

ERRATA

In the Courier of May 31, (Vol. 15, No. 12) the name of Frederick D. Richey should have been given as author of the article appearing on page 97, entitled "A Short Method for Calculating the Probable Error of a Mean."

FIELD STATION CONDITION AND PROGRESSHUMID ATLANTIC COAST STATES (South to North)GEORGIA

State College of Agriculture, Athens (R. R. Childs) (No report)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor) (No report)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love) (No report).

HUMID MISSISSIPPI VALLEY STATES (South to North)LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (June 1) Apr. 30.-
J. W. Ingram, of the U. S. Bureau of Entomology, has arrived to study rice insects and expects to be located here permanently.

May 8.- U. S. Senator Ransdell was present today at the field-day exercises of the New Iberia Experiment Station and delivered a very interesting address in which he spoke very highly of the work of the U. S. Department of Agriculture.

May 15.- Farm operations have been progressing favorably, until last night, when rain commenced falling, and this morning we had a very heavy rain. The nursery, both irrigated and dry land, was seeded on May 9, 10, and 11. None of the large plats has been seeded as the land is very compact from the heavy rains of the past winter and spring and grass has commenced to grow, making preparation much harder than usual. Extra teams have been employed in order to get over the entire farm with the disk harrow before the growth of grass becomes so thick as to necessitate replotting. If the weather clears, in a day or two we will be able to go forward even faster than before the rain, as high winds had dried the surface soil to such an extent that it was hard to operate the disk harrow properly.

Agricultural Experiment Station, Baton Rouge (H. Stoneberg) (May 31)
The weather during the last half of May has been hot, with average maximum temperatures of about 90 degrees and only two showers. With plenty of moisture in the soil from the excessive spring rains, conditions have been ideal for the rapid growth of all crops.

The early planted hybrid corn in the experiments has made very rapid growth and is 6 to 8 feet tall. Some of the early hybrids are silking and tasseling. The sugar-cane borer has made its appearance in the corn plats and is doing some damage. The damage done to the stalk is very similar to the damage done by the European corn borer in the northern infested areas.

The small grain nursery and the oat plats were harvested during the past week. Considerable difference was noted in the amount of rust present on the various oat selections.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (No report)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (June 4)

Our experimental corn field was planted last Friday and Saturday, June 1 and 2, after weeks of delay. Almost daily rains prevented earlier planting and it was necessary to disk, smooth and mark the field between showers. While the seed bed was not so mellow as might be desired, yet it was in fairly good condition. The abundant soil moisture and the present hot, bright weather will insure quick germination and rapid growth.

The early planted corn has made but little growth and has had poor color. It is only in these few June days that it has shown any improvement.

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins) (June 7) The late planting of corn for the self-pollination work in corn breeding was completed on June 1 and 2. The weather has been very dry and the early planted fields are far behind normal. All the Station plats have now been planted and have been cultivated once with the exception of this last planting. In general, a very good stand has been obtained. Good stands are not general throughout this part of the State, however, as some farmers used untested seed corn and the cold weather rotted much of it.

Winter wheat began to head June 1, which indicates an early harvest. It probably will mature about the first week in July. Very little winter-killing occurred in the wheat plats. The dry weather has held the cat crop back so that harvest probably will be rather late, at least of the early varieties.

Iowa State College, Ames (Barberry Eradication, J. E. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (No report)

Post Office Building, Urbana (Barberry Eradication, G. C. Curran) (May report) The resurvey of Stephenson County was completed during this month. Over 600 small bushes were found which had evidently grown from seed since the original survey in 1920. These small bushes were on land with a limestone formation and their growth had been very rapid. Sixty large bushes were found that had been missed on the original survey. About 2,000 seedlings were located in this county and over 700 of the bushes which had been dug in 1920 were found to be sprouting. Practically all of the bushes found during the past month have been treated with salt and the seedlings were dug.

During the first week of May rust observations were made in various parts of the State. On May 2 rust in the pyckia stage was found near Toulon. Near these bushes was a large patch of quack-rass which was the probable source of infection, as teliospores were abundant.

Plans for the season's campaign progressed rapidly during May and practically all of the field assistants have been obtained.

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. M. Hoffer) (No report).

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (No report).

College of Agriculture, Purdue University, La Fayette, (Barberry Eradication, K. E. Beeson) (June 1). During May two men did resurveying in the State, spending most of their time in the cities. Few sprouts or bushes have been found in towns that were carefully covered in original survey several years ago.

On a trip through southern Indiana May 6 to 12, pyrenia and ascia were found on bushes in Vanderburg and Jennings counties. On May 25 Frank Trolik found that the cups on bushes in the former county were open and discharging spores, but no rust was found on the grasses around the bushes.

An original survey will start in Marion County in June, and some resurveying will be done in other counties.

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, John W. Baringer) (May 31). An original farm-to-farm survey, was made of Clinton and Warren counties in April and May. Scouts reported all barberries removed in Clinton County. In Warren County all were removed except eight locations in the village of Franklin and one in the country. Escaped barberries were located at one point in each county but in both instances the number of bushes was small. It is planned to push the rural survey in Butler and Hamilton counties in June.

The Ohio State Division of Agriculture assisted materially during the last half of May by serving ten-day removal notices on reluctant barberry owners in the territory covered by the Federal forces last year in the farm-to-farm survey. State inspectors will be available for work on barberry eradication at all times during the coming summer. The State forces will take care of the necessary resurvey in the territory covered in Ohio up to December 31, 1922. They will also have charge of the application of chemicals to barberries in escaped areas.

During April and May barberries in many sections of Ohio were under frequent observation in order to determine the date of the first appearance of rust on the bushes. Infection was first seen near Lewisburg in Freble County and near Pleasant Plain in Warren County on May 14. Three days later rust was found on barberries in Seneca County near Tadmire. By May 25 rust had been reported in many places throughout Ohio from the Ohio River on the south to the south to the Michigan line and Lake Erie on the north. Ascia were first found near Springboro in Warren County on May 19. An abundance of infection in the ascial stage was found on barberry seedlings near Lewisburg on May 24.

Infection on barberry became general throughout Ohio a month later than usual. This condition it seems is attributable to unseasonable weather. Because of the cold weather barberry leaves were just coming out of the buds in west central Ohio during the last ten days of April, three weeks later than they normally unfold. Precipitation was deficient all over Ohio during the latter part of April and early May. The drought was terminated by rain and snow on May 8. Teliospore germination may have taken place in April prior to the appearance of barberry leaves, but the drought undoubtedly retarded subsequent germination until the rainfall of May 8. Evidently there was little chance for barberries to become infected prior to this date.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) (No report).

WISCONSIN

Agricultural Experiment Station, Madison (J. C. Dickson) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, William W. Miller) (May 31) A few advance meetings of the barberry forces have been arranged in order to inform the men on the latest barberry literature and other important matters. Noel F. Thompson will give an illustrated talk to the scouts, showing why eradication with chemicals is advisable.

Most of the scouting force will start work from June 11 to June 18 and some on July 1.

Rust infection has been quite heavy on barberry seedlings and sprouts at Black Earth, Wis. Rust also has been observed in Jefferson, Dodge, Richland, Sauk, and Grant counties.

Five men have been scouting the city of Milwaukee and up to this time 270 bushes have been located on 100 properties.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, F. C. Stakman) (No report).

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt) (No report).

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (June 3) After a very cold spring, the field survey was finally started May 1. Particular attention has been given to checking former plantings for sprouts and seedlings. The work was begun in the west central and northwestern parts of the State, the principal wheat producing section, and all sprouts were destroyed before they had a chance to spread rust.

All of the sprouts from escaped bushes in Renville and adjacent counties were treated with salt. On May 30, examination of 31 bushes treated with a linseed oil acid residue at Red Wing, showed that 30 of the 31 bushes were dead. One large bush on a steep hillside was not affected, as the material had run down hill. Where the bushes had been cut off and the crown treated, no sign of life was visible. One cane which was allowed to stand had sprouted this spring, but had died. The material used for treating is not so easy to handle as salt and sodium arsenite. Vigorous sprouts from 175 escaped bushes at Northfield were treated with sodium arsenite on May 31.

The development of rust on barberry bushes is slow. The first infection was found at Northfield on May 4. The infection is not so heavy as in previous years, as the weather has been unfavorable. Where telial material is plentiful, infection is quite heavy in some places.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger) (June 2) During the last half of May there has been so much rain that very little field work has been accomplished as about the time the soil dries out enough to work another rain occurs. Spring-planted crops are very backward. On May 19 the kafir rate-of-seeding plats, including 5 rates each of Sunrise and Reed kafirs were seeded. Although a very dashing and washing rain fell on the 21st, kafir in the rate plats has emerged to fair stands.

The general practice among farmers is to list in their row crops. When rather heavy rains occur the lister furrows are filled so deeply with soil that it is necessary to replant. Much replanting has been done already this year and it is likely that much more will have to be done because of the heavy rains. In view of the scarcity of seed this year, this is quite a serious condition.

Although it was rather wet for field work, the plats for the fourth date-of-seeding were sown on June 1.

Maximum temperature for last half of May, 91° on the 31st; minimum for same period, 46° on the 16th. Measurable quantities of rain fell on 7 of the 16 days of this period, the precipitation being 5.61 inches, with a total for May of 8.11 inches.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker) (June 4) The 1923 oat nursery is a large one. We have about the usual number of replicated row rows and a very large number of single row rows, seed for all of which was inoculated with smut. This series includes many selections which have been smut free in previous tests as well as numerous individual selections of Kanota oats grown in head rows in 1922. A very large number of oat head rows is being grown this year, including some types from foreign countries, selections of several varieties received from T. R. Stanton, many selections of Burt oats made by Messrs. Stanton and Parker in fields near Cameron, Mo., in 1922, and a considerable amount of material for the study of aberrant and false wild types in Kanota oats. An Adams project covering the last mentioned phase of the work has been approved.

Nearly all varieties of winter wheat in the nursery are fully headed. The wheat is in splendid condition except for some rather serious lodging and promises high yields. A few crosses are being made between Nebraska No. 23 and Kanred, although continued wet weather has interfered with this work. A number of bearded and awnless selections of the winter-spring wheat crosses being grown in row rows appear early and promising. There are no very early types in the head rows of Kanred X Kota but there are a number of early and rather promising types in the head rows of Kanred X Hard Federation.

The earliest and perhaps most promising hybrid types in the head rows are those of the Kanred X Prelude cross. There was very little winterkilling in the adapted varieties, though there was some damage from spring freezes to some of the less hardy varieties of soft wheat such as Nebraska No. 23 and Zimmerman. Blackball wheat also suffered some injury from spring freezes in eastern Kansas.

The following nursery material of sorghum has been seeded!

1. About 150 rows of miscellaneous varieties, selections and hybrids, including material used in the study of heterosis in sorghums.
2. F₄ generation of Kansas Orange XDwarf Yellow milo, about 150 rows. A study of chinch-bug injury and of smut resistance is being made in this cross.
3. Thirty-one pedigree selections of Kansas Orange sorghum have been sown in triplicate rows.

The seed of about 100 selections for the F₅ generation of the Red Amber X Feterita cross has been prepared for planting but a rain of 1.7 inches on May 31 and another of 0.57 inches on June 4 will delay planting of this material until June 6. All selections of this cross which are being continued are white seeded, while most of them are smut resistant and have juicy stalks. Some of these selections appear promising. One of them yielded 7 bushels more grain to the acre than the feterita parent in comparative plot tests in 1922.

The areas in the soil fertility and tillage plats at the Agronomy Farm which were known to be infected with the "fake-all" disease in 1922 are considerably larger this year and the effects of the disease will seriously interfere with the experimental results. In a number of circular areas more than 10 feet in diameter the plants will not head, and as a consequence the yields will be materially lessened on these plats.

A number of similar diseased areas are present in the large field on which Kanred wheat for increase and sale has been grown for five out of the last six years.

Flag smut was recently discovered by a field agent of the Plant Disease Survey in Leavenworth County, Kans. Light infections have since been found in the cooperative State and Federal survey being made in Wyandotte County, Kans. While the presence of this disease in Kansas may prove to be a serious factor in wheat production, the fact that Fulcaster and most of the hard red winter wheat varieties are resistant to it will serve to hold it in check. Harvest Queen wheat, which is widely grown in northeastern Kansas and which is very susceptible to flag smut, could be replaced by Fulcaster if necessary, although the farmers in this territory prefer a beardless variety.

Dr. Karl F. Kellerman, Associate Chief of the Bureau of Plant Industry, was granted the honorary degree of Doctor of Science by the College at the Commencement exercises held on May 31. On May 29 and 30, Dr. Kellerman looked over the cooperative cereal experiments at the Station, including the cereal disease, small grain, and corn-breeding projects and experimental work in progress at the Agronomy Farm, Drs. H. B. Humphrey and W. E. Tisdale also visited the Station on May 30 and 31 for the purpose of inspecting the cooperative cereal disease and cereal breeding experiments and making plans for the continuance of these experiments.

W. S. Case, a New York broker, J. F. Murray, buyer for the Quaker Oats Company of Chicago, and C. H. Hardenberg, president of the Southwestern Milling Company of Kansas City, spent a day looking over the crops work at the Station on June 2. Mr. Case has made a special study of crop estimating and forecasting and he and his associates have made very successful use of biometrical methods, especially multiple correlation, in predicting crop yields.

Prof. L. E. Call and H. R. Sumner, crops extension specialist, will accompany the Santa Fe "Safer Farming Special" on a week's trip over the Kansas lines of the Santa Fe railroad. Professor Call will discuss problems of crops production at each of the places visited and Mr. Sumner will have charge of the agronomy exhibit car.

Prof. S. C. Salmon was granted the Master of Science degree on May 31. The subject of his thesis was "Seeding Grain in Furrows."

E. R. Ausemus, a senior student who has been assisting in the cooperative crop improvement experiments during the past year, has accepted a graduate fellowship with Dr. E. F. Gaines at the Washington State College and will report at Pullman on July 15. F. D. Ruppert, one of Doctor Gaines' students, has been appointed graduate fellow in crop improvement at this Station and expects to come to Manhattan July 1.

Ross J. Silkett has been appointed assistant in cooperative experiments, taking the place of W. E. Dale, who has resigned to go into commercial work at Vero, Fla.

W. H. von Trebra, who assisted A. F. Swanson on the cereal project at Hays in 1922, and who has been assisting in the crop improvement studies during the winter, will be foreman of the nursery at this Station this summer. H. B. Riley, a senior student in agronomy, also will be employed in the nursery this summer.

April weather. Highest temperature, 82° F. on April 30; lowest 22°, on the 6th; mean monthly temperature, 54.2°, average mean for April, for a long period of years, 54.5°. Measurable precipitation fell on nine days, totaling 2.67 inches for the month, as compared with the average precipitation of 2.68 inches. There were 12 cloudy, 4 partly cloudy, and 14 clear days.

May weather. Total precipitation, 4.14 inches; number of clear days 11, cloudy 4, partly cloudy 16. Lowest temperature, 23° with frost on May 9; highest temperature, 82° on several days.

Hays Branch Experiment Station, Hays (B. B. Bayles) (June 5) I returned to Hays April 25 after spending about three weeks assisting in the cooperative cereal experiments at Manhattan. Winter wheat is in very poor condition over the western third of Kansas. An examination of fields showed that many of the small sprouts were dead. They were twisted and curled beneath the surface of the soil but did not have force enough to push through. The stand in many fields is poor and there has been very little spring growth. A rain of 1.34 inches occurred on April 26 and 27. This put the soil in very good condition for sorghum planting, which will start in another week.

The stand of oats and barley is very poor on most fields, but the recent rains have sprouted the remainder of the grain, which will thicken the stand.

The outcome of the small-grain crop will depend on the lateness of the season and whether or not weeds take the crop. From July 9, 1922, until April 26, 1923, only 4.2 inches of rain fell, while the normal rainfall for this period is 13.59 inches.

A barley nursery of 724 rows, sent out by Dr. H. V. Harlan, was sown at Hays and also at the Coloy Branch Station, in the northwestern part of the State.

The eleventh annual round-up was held at the Station on April 25. The results of stock-feeding trials of the past winter were discussed as the main part of the program. Because of rainy weather only about 200 visitors were present.

COLORADO

Akron Field Station, Akron (F. A. Coffman) (June 3) Weather conditions have been very unusual during the past two weeks. Rain has fallen nearly every day and field work has been very much delayed. Corn planting has been impossible because of the condition of the fields. More than 3.50 inches of rainfall was recorded during the month. Several hail storms occurred, but the resulting damage was not great although tender growth was injured somewhat. The oats were more severely injured than the other cereals. Corn was just emerging and many of the seedlings were cut to the ground.

Since May 29 there has been little moisture and the planting of corn on the regular projects was completed on June 1. Corn planted May 12 has come up and good stands were obtained in most of the rows. The spring cereals are growing rapidly. A few of the earlier varieties are in the boot. Winter rye started to head May 28. None of the winter wheat has as yet started to head. Winter wheat is very backward this season.

Planting in the screened breeding-garden is practically completed. The plants of the chlorophyll-deficient oats have emerged to excellent stands and all variations from white to green are to be observed. A chlorophyll-deficiency in winter rye was observed on the Station the past few days, the leaves showing alternate yellowish-green and dark green stripes.

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)
(No report).

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel) (No report).

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter) (No report).

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Hutton)
(No report)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)
(No report)

Agricultural Emergent Station, Agricultural College (University Tradition, Geo. C. Mayone) (May 25) The farm-to-farm survey was started May 3 and since that time good progress has been made. No burrs have been found, but about 500 sprouts ranging from 6 inches to 2 feet in height have been located and destroyed. These were made on properties where burrs had been destroyed during 1917, 1918, and 1919. In one case sprouts were found on a property where the owner had originally cut the bushes down. The work was not started before May 3 because of inclement weather.

Mr. Mayone has completed study for the degree of Master of Science of the North Dakota Agricultural College, his final examination having taken place May 25.

Northern Great Plains Field Station, Moxian (J. C. Brinsmade) (June 5) The last half of May was very warm and generally favorable for plant growth.

The flax nursery seedlings on flax-sick soil were made with the Columbia plow May 18. The flax hybrids were sown by hand May 19, spaced 3 inches apart. A few additional rows sown May 21 and 22 completed the nursery seeding on both clean and flax-sick soil. The flax emerged promptly in about a week after sowing. Stand counts were made on the flax nursery June 2.

Weeds are growing very rapidly now but are being kept under control in the alleys and nursery.

Maximum temperature for the last half of May was 68°, recorded May 27; minimum 38°, recorded May 17; precipitation 0.96 inch.

Dickinson Substation, Dickinson (Ralph W. Smith) (June 1). Cool, dry, weather prevailed during the first three weeks of May. The last killing frost occurred on May 10, with a minimum temperature of 24 degrees. Normal temperatures prevailed during the last 10 days of the month. Several showers occurred during this period, making the total precipitation for the month 1.24 inches which is about 1.15 inches below the normal for the month.

Fairly good stands were obtained with all cereal crops and all are in good condition. Corn varieties emerged about a week ago and have grown rapidly during the recent warm weather. There has been little injury from cutworms, and but little replanting will be necessary.

The cereal plats and nursery rows have been trimmed and the nursery has been cultivated. Stand counts have been taken with all varieties in plats and nursery.

The planting of flax, corn, and potatoes is in progress in the community. Nearly all other seeding is completed.

The station was visited last week by Mr. J. G. Diamond, agricultural statistician for this State.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May) (May 30) Recent rains and warm weather have started rapid growth of all fall-sown and spring-sown grains. Spring grains sown about the middle of April have made more growth in many instances than fall-sown grains. Fall-sown wheat throughout this section is very uneven in both stand and growth. Many farmers report that fall wheat

sown on fallow land is extremely weedy. This condition probably results from dormant weed seeds lying in the soil from the years preceding the summer fallowing.

The winter wheat hybrid nursery shows remarkable differences in winter hardiness. Some rows have fully 100 per cent stand while others have only about 5 or 10 per cent stand.

The office building which is being constructed here is almost half completed. The building will probably not be ready for occupancy before the middle of June.

The precipitation during May has totaled 2.13 inches, which is slightly below average. Precipitation was recorded on fourteen days during the month. The maximum precipitation recorded on any one day was 0.62 inch on the 19th. The maximum temperature during the month was 82 on the 26th, and the minimum temperature 26 on the 3d.

State College of Agriculture, Bozeman (Barberry Eradication, W. H. Christopher) (No report).

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (A. E. McClymonds) (May 22) The spring has been unusually dry. Frequent high winds have dried out the ground and there have been few rains that were of any benefit. All of the small grains were sown early and have germinated well, but are not growing as rapidly as they should because of lack of moisture. It will be necessary to irrigate them this week. We do not like to water them until they have reached the stage where they will shade the ground, for our soil bakes badly, but it will be necessary to do it this year.

Corn planting was completed May 22. All of the plats are diked preparatory to watering and they will all be watered by the last of the week. The cereal nursery will be watered May 24.

The clovers and alfalfa were sown early and are making a vigorous growth.

The following cereal crops were sown in duplicate fortieth acre plats this year.

Oats: Golden Rain, Early Mountain, Swedish Select, Victory, Golden Rain from Sweden, Victory from Sweden, Crown from Sweden, American Triumph, Welcome, Hvitling, Iogren, Albion, Rustless, Idamine, and Carleton.

Barley: Trebi, Belli, Hammchen, Horsford, Meloy, Alpha, Algerian, and Smyrna.

Spring wheats: Dicklow, Federation, White Federation, Nicholson's Federation, Onus, Pacific Bluestem, Marquis, Early Burt, Major, Roadicea, Quality, Hard Federation, Red Bobs, and New Zealand.

Winter wheats: Manfred, Turkey, Kharkof, Fortifield, Hybrid 123, and Jenkins Club. Federation also was fall-sown to test its winter hardiness. One plat of the Federation entirely winterkilled and was reseeded; the other plat

winterkilled about 90 per cent but was retained. The Jenkin Club also winter-killed very badly. The other winter wheats are making excellent growth. They stood out heavily and are jointing now. They should be ready to harvest about July 12. Grasshoppers have damaged the ends of the plats to some extent

The flax was sown this year in plats as usual and was also sown as a nurse crop for clover. The following varieties were seeded: Daint, N. D. R. 114, N. D. R. 52, Reserve, and Primost.

The indications are that grasshoppers will be a serious pest this year. All of the millions of eggs that were laid last fall seem to be hatching. Poison mash has been prepared and will be spread this week, but we probably will have difficulty in saving our young clover. The Station is comparatively free from grasshoppers so far, as all cultivated fields were fall plowed and the spring-tooth harrow was used on alfalfa fields, but the hoppers are numerous enough in the surrounding county to cause alarm.

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe) (May 31) Low precipitation during the first three weeks of May has necessitated the use of considerable irrigation water. Practically all of the small-grain crops have received one irrigation. Crops have made good growth and with plenty of irrigation water more than an average crop can be expected.

Nursery rows look unusually good. Some of the winter-wheat row nursery will soon be heading. The winter barley that survived the winter has started to head.

During the last three days of May about $3/4$ of an inch of rain fell. The soil is now in excellent condition for corn and potatoes, both of which were planted a short time ago.

OREGON

Sherman County Branch Station, Moro (D. E. Stephern) (May 31) Unusually cool weather prevailed during the last two weeks of May. There were five days during the month with minimum temperatures of freezing or below. The total rainfall for the month was 0.42 inch, 0.13 inch being the greatest amount during any one week.

Most of the winter wheats on the Station are now heading, giving promise of good yields if the weather continues favorable. On account of thick stand and heavy growth, however, a good rain will be needed within the next week or ten days to insure a very big crop. Winter wheat on shallow ground is burning. Spring barleys and the earliest spring wheats will begin heading within a week.

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones) (May 31) The weather during the past two weeks has been too cool for rapid growth of rice. The maximum temperature for May was 93 degrees; minimum, 42 degrees, and greatest daily range 38 degrees. The evaporation for May was 6.707 inches and the precipitation 0.57 inch. The highest average hourly wind velocity for a 2-hour day, was 9.41 miles on May 25.

The varietal, small increase, and rate-of-seeding experiments have been irrigated four times and the nursery three times. The stands obtained are good and the rice looks fine at present.

We obtained good stands on the drilled and fairly good stands on the broadcast plats in the water-grass-control experiments in which the rice was irrigated up before submerging. These plats are now submerged and the rice is just starting to emerge through the water on the plats submerged 4 and 6 inches deep.

In the water-grass-control experiments with continuous submergence after broadcasting, the rice has emerged through the water on the plats submerged April 25 and is starting to stand erect. On the plats submerged May 5 the rice is just emerging through the water, and on those submerged May 15 and 25 the rice has germinated but has not reached the water surface.

The leaf miner which I reported as attacking the weak rice seedlings as they emerged to the surface of the water last year is present at the Station again this year, but have observed only on volunteer rice, canary grass, and Italian ryegrass on plats that were submerged after broadcasting April 25. As more rice emerges through the water they may damage stands. C. M. Packard of the U. S. Bureau of Entomology at Sacramento called the other day and collected some leaf miner specimens.

Dr. P. B. Kennedy and Prof. B. A. Madsen of the Department of Agronomy of the University of California, with a class in field crops visited the Station May 22.

University Farm, Davis (V. H. Florell) (June 1) The weather continues cool and pleasant with conditions entirely favorable for the final growth and maturity of the cereals. Nearly all of the varieties of November-sown barleys are fully ripe and harvesting will begin next week. A number of barley diseases have appeared, the principal ones of which are covered smut of barley, Rhynchosporium and what appears to be net blotch.

Sunset wheat is fully ripe, and Federation and other early varieties are ripening rapidly. Within the last ten days many varieties in the wheat classification nursery have developed abundant infections of stem rust. A light infection of yellow stripe rust was noted on Early Baart. It is not likely that the infection of stem rust will be severe unless we should have rain, which is very unlikely. Varieties of oats are fully ripe and ready to harvest.

Varieties of wheat and barley on the richer soil areas are lodging quite badly, particularly the barleys. Approximately half of the varieties in the barley classification nursery are badly lodged, while in the plats the California Mariout, Club Mariout, and Skyrna are lodged most badly. On the whole the wheat varieties are standing well.

The prospect of a good crop of wheat and barley in Yolo County is very good. Last week, enroute to Chico, a trip was made through the grain-growing districts. Indications are that the crops will be light from the late-sown grain, but the fall-sown fields looked very good.

Agricultural Experiment Station, Berkeley (Fred W. Briggs) (No report)

CEREAL COURIER

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(NOT FOR PUBLICATION)

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June 20, 1923

No. 14

Personnel (June 11-20) and Field Station (June 1-15) Issue.

PERSONNEL ITEMS.

Dr. Carleton R. Ball, Cerealist, expects to make a tour of the field stations in the States of the Mississippi Valley and Great Plains area during July and August. A trip to the stations in the far west is projected later. An outlined itinerary will appear in the Courier of June 30.

J. Allen Clark, agronomist in charge of western wheat investigations, was granted the degree of Master of Science June 20 by the University of Minnesota.

Ernest Dorsey has been appointed agent, effective July 2, on one-third time basis, in the cooperative cereal investigations conducted at Ithaca, N. Y., with the New York (Cornell) Agricultural Experiment Station. He will conduct cytologic and histologic studies of wheat and oat species and hybrids.

Eugene H. Emerson was appointed field assistant, effective June 15, in the corn-breeding experiments that are being conducted in cooperation with the New York (Cornell) Agricultural Experiment Station at Ithaca.

Miss Marion A. Griffiths, assistant pathologist, at present engaged in cooperative research at the Missouri Botanical Garden, has been granted the degree of Master of Science by the Washington University, St. Louis, Mo.

Dr. C. E. Leighty, agronomist in charge of eastern wheat investigations, left June 20 to consult with officials of agricultural experiment stations in Missouri, Illinois, and Indiana, and to supervise the harvesting of experimental wheat plats grown cooperatively in the States named.

Dr. E. B. Mains, agent in the leaf-rust investigations in cooperation with the Purdue University Agricultural Experiment Station, arrived in Washington June 13 from Knoxville, Tenn., to take leaf-rust notes in the extensive cereal nurseries at the Arlington Experiment Farm and to consult with the cerealist and project leaders of the Office. He will return to La Fayette, Ind., June 21.

George C. Mayoue, State Leader of barberry eradication in North Dakota, was granted the degree of Master of Science by the North Dakota Agricultural College June 11.

F. D. Richey, agronomist in charge of corn investigations, will leave Washington June 25 to confer with officials of the Cornell University Agricultural Experiment Station concerning cooperative corn experiments under way at Ithaca.

Russel G. Rothgab, of Page County, Virginia, was appointed June 18 as field assistant in the field and nursery cereal experiments at Arlington Experiment Farm.

Jerome P. Seaton was appointed field assistant June 25 to assist in the cereal experiments that are being conducted at Arlington Experiment Farm,

Arthur F. Swanson, assistant agronomist, has completed his graduate study at the University of Minnesota and was granted the degree of Master of Science by that institution on June 20. He immediately returned to the Hays Branch Experiment Station, Hays, Kans., where he will resume charge of the cooperative cereal experiments.

Dr. W. H. Tisdale, pathologist in charge of smut investigations, left Washington June 20 to make final notes on the harvest of wheat varieties in the flag-smut experiments that are being conducted at Granite City, Ill., St. Louis, Mo., and nearby points.

Roy A. Weaver has been appointed junior analyst, effective July 2, to conduct laboratory experiments at La Fayette, Ind., under the direction of Dr. G. W. Hoffer, in connection with the corn investigations that are being conducted in cooperation with the Purdue University Agricultural Experiment Station.

The following additional employees have been appointed to serve as Field Assistants in the barberry eradication campaign during the season of 1923:

Illinois: Luther A. Black, Paul J. Byrd, Earl D. Cornwell, Virgil B. Fielder, Atlee L. Hafenrichter, Darrell I. Hanly, Siegfried P. Harter, Joseph B. Hawkes, Lyle J. Hayden, Mark A. McCarty, Wendell S. Muncie, Carl J. Ostrom, Orda A. Plunkett, Clifford F. Reid, Prentiss E. Reid, Paul T. Sanders, Orton K. Stark, George F. Sullivan, James A. Twardock, and Otis B. Young.

Indiana: William P. Allyn, Lawrence L. Braybrook, Henry M. Burlage, Edmund R. Carman, Stanley Castell, John G. Christie, Walter M. Cross, Lawrence A. Dougherty, Everett J. Eliason, Virgil R. Emerson, Roy L. Fosbrink, Verne C. Freeman, Charles D. Goodale, Albert W. Heine, Walter E. Heller, Donald V. Holwerda, Otto G. Johannigsmeier, Wayne E. Leer, Glenn H. McKenzie, Wm. W. Ridenaur, Ralph H. Rogers, Charles G. Seearce, Donald B. Thomas, Harold J. Wegel, Bruce V. Worth, Wilfred B. Young, and Reginald B. Zumstein.

Iowa: Ernest V. Abbott, Ralph W. Adamson, Charles E. Brookhart, Morrison H. Burns, Forrest G. Inman, James K. Kent, Raymond T. Larson, Donald R. Porter, Kenneth Reeves, Elmer I. Rosenberger, Marion A. Smith, James W. Thompson, and Marion E. Yount.

Michigan: Justin C. Cash, John R. Cole, Murillo A. Daniels, Joseph B. Edmond, Harry M. Jennison, Leo J. Klotz, Ben W. Lafene, Herdis L. Lewis, Sigurd T. Mathieson, Charles W. McIntyre, Leslie J. Meyer, Lucius H. Moore, George W. Olson, Howard E. Parson, Carl H. Ripatte, Roscoe G. Smith, Dewey Stewart, Forrest C. Strong, Paul E. Tilford,

Minnesota: John W. Adams, John H. Craigie, Robert M. Douglas, Lewis L. Dow, Stuart J. Dunn, Robert M. Groesbeck, Eddy R. Johnson, Everett R. Johnson, Paul W. Kunkel, Spencer A. Mann, Harold P. Morris, Lloyd I. Nelson, Arthur G. Petersen, David W. Purdy, Dwight L. Quam, Herman A. Rodenhiser, Vard M. Shepard, Alfred L. Sjewall, George P. Steinbaur, Arthur W. True, Gerald A. Vacha, Charles W. Van Cleve, and Lawrence E. Wood.

Montana: Herbert D. Cashmore, Miss Florence L. Markin, John C. Paugh, and William L. Popham.

Nebraska: Harold M. Adams, Harold M. Barnett, William E. Bruner, Ralph H. Cole, Benjamin F. Dittus, Thomas J. Fitzpatrick, Jacob Friedli, Gomer V. Jones, Thomas L. Koontz, John L. Moore, George R. Pinkerton, Julian W. Riddick, Ray C. Roberts, Percy Rohrbach, Loyal L. Rulla, Rayburn W. Samson, Lawrence A. Schaal, Forrest J. Scrivner, Willard J. Simpson, Eaton M. Summers, Claude W. Thurber, Edgar C. Tullis, and Robert E. Weir.

North Dakota: Lyril H. Arnold, Carl H. Baden, Christian S. Benson, Philip E. Boise, E. Verle Deach, Daniel J. Denis, Earle G. Ferguson, Harland J. Fogarty, Herbert W. Herbison, George C. Kadlec, Hilmen E. Kjorlie, Lyle E. Mowris, Franklin W. Roberts, Ben. P. Rumpeltes, Leonard N. Severson, Winfield S. Tarbell, Adolph Wall, Charles F. Wells, Fred S. Willson.

Ohio: Malcolm G. Anderson, Carl W. Aneshansel, Harry Atwood, Albert N. Brooks, Marcus E. Buckman, Earl K. Dobbins, John R. Fitzsimmons, Clair T. Hummon, Sylvester S. Humphrey, Carey R. Huston, Thomas H. Jones, Bernhard S. Meyer, Paul G. Minneman, Harmon A. Runnels, Clyde F. Shackson, John A. Wagner, and Cyrus B. Wright.

South Dakota: Merton Q. Aldrich, Ronald C. Bentley, Floyd D. Billings, Abner J. Bricton, Raymond Bulger, Ralph M. Caldwell, Frank Coffey, Harold J. Enright, Paul L. Errington, Jasper S. Fairchild, Francis F. Fish, Augustus T. Haines, Albert T. Hume, Elvin H. Korstad, George T. Malmer, Kirk T. Mears, Walter H. Michaels, John W. Moore, Joe F. Murray, Donald T. Rice, Clarence H. Schutte, Frederick A. Seemann, Jr., William K. Soule, Julian I. Staven, Paul C. Underwood, Glenn L. Walter, Earl I. Welch, and Frank F. Welch.

Wisconsin: Everette L. Campbell, Kenneth H. Coffett, Carl W. Damsheuser, George K. Davis, Leo J. Federer, George A. Fiedler, Frank L. Gunderson, John T. Harrington, Carter M. Harrison, Earle F. Holt, Daniel O. Horne, George W. Horton, Leonard J. Kaasa, Arthur M. Knutson, Howard R. Lathrope, George W. Longenecker, Charles J. McAleavy, Harris B. Parmele, Eugene J. Rankin, Marvin A. Schaars, Walter J. Seymour, Byron H. Spear, Hugh R. Stiles, Clarence W. Weber, Clem J. Weyker, and Alfred M. Wolfson.

VISITORS

Dr. A. W. Morrill, representing large commercial rice and wheat-growing interests in the Yaqui Valley of México, consulted with Office specialists June 12 on wheat varieties and improvement and the inspection of rice fields for disease and insect pests. Doctor Morrill was in Washington to attend the hearing on the proposed quarantine on the importation of paddy rice from Mexico.

MANUSCRIPTS AND PUBLICATIONS.

Galley proof of Department Circular 280, entitled "Kota Wheat," by J. Allen Clark and L. R. Waldron, was read June 16.

Page proof of article entitled "The Inheritance of Growth Habit and Resistance to Stem Rust in a Cross Between Two Varieties of Common Wheat," by Olaf S. Aamodt, for publication in the Journal of Agricultural Research, was read June 12.

Page proof of article entitled "The Relation of Certain Soil Factors to the Infection of Oats by Loose Smut," by Lucille K. Bartholomew and Edith Seymour Jones, for publication in the Journal of Agricultural Research, was read June 12.

Second page proof of article entitled "The Influence of Temperature on the Spore Germination of *Ustilago zeae*," by Edith Seymour Jones, for publication in the Journal of Agricultural Research, was read June 12.

Page proof of Department Circular 275, entitled "Flag Smut of Wheat," by W. H. Tisdale, G. H. Dungan, and C. E. Leighty, was read June 13.

Page proof of Farmers' Bulletin 892, revised, entitled "Spring Oat Production," by C. W. Warburton, which was transmitted for revision February 3, was read June 14.

Page proof of article entitled "Biologic Forms of *Puccinia graminis* on Varieties of *Avena* spp.," by E. C. Stakman, M. N. Levine, and D. L. Bailey, for publication in the Journal of Agricultural Research, was read June 20.

Department Bulletin 1157, entitled "Influence of Spacing on Productivity in Single-Ear and Prolific Types of Corn," by E. E. Brown and H. S. Garrison, was received from the Government Printing Office June 12, bearing date of May 21, 1923.

MEETING OF AMERICAN SOCIETY OF AGRONOMY.

The Summer meeting of the American Society of Agronomy will be held at Urbana, Ill., June 22 and 23. The morning of June 22 will be devoted to an explanation of the agronomic projects under way at the Illinois Agricultural Experiment Station and the afternoon to a visit to the University South Farm. The morning of June 23 will be devoted to an inspection of the experiments at University North Farm and the afternoon to an inspection of corn-disease experiments at Bloomington, Ill., conducted on the farms of Funk Bros. Seed Co., cooperatively by the Office of Cereal Investigations and the Illinois Agricultural Experiment Station.

Authorizations to attend the meeting have been requested for the following:

James R. Holbert, Benjamin Koehler, and Charles S. Reddy, of Bloomington, Ill.; B. H. Duddleston, Dr. G. N. Hoffer, Glenn M. Smith, and John F. Trost, of La Fayette, Ind.; Lyman C. Burnett, Arthur A. Bryan, and Merle T. Jenkins, of Ames, Ia.; Dr. A. M. Brunson, of Manhattan, Kans.; and Olaf S. Aamodt, University Farm, St. Paul, Minn.

FIELD STATION CONDITION AND PROGRESS.

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs) (No report)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor) (June 14) Harvesting of the barley plats and nursery rows has been completed. The barley yields, if weather conditions allow threshing the crop in good shape, will be high. The early fall-sown oats such as Fulghum, Kanota, and Ferguson Navarro are also in the shock. The later oat varieties show indication of much higher yields than the earlier ones.

Wheat is in the milk stage. The recent rains have caused much lodging in the lower sections of land and some loss in both quantity and quality of grain is certain. The yield should be above average however. Leaf rust has increased rapidly in the last few days, but the infection is still below the usual.

Wheat-rye hybrids are common this season as well as last, in the wheat plats. Approximately 100 of these plants have been observed, most of which are in four plats. Some indications of natural crossing between wheat varieties, particularly in Nebraska No. 28 and Kanred, are also evident, but less crossing than usual seems to have occurred.

HUMID MISSISSIPPI VALLEY STATES(South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (June 12) Rice seeding was finished June 2. By employing extra horse power it was possible to take advantage of the favorable weather during the last 3 weeks of May. Practically all rice is up to a good stand. The varietal plats germinated within 6 to 9 days after seeding. The fertilizer experiments were put in June 1 and 2, only 3 days later than the same plats were seeded last year. While seeding was in progress the soil became rather hard, making it difficult to secure a good seed bed. Since that date, however, several showers have been of much benefit. The seeding of soybeans will be completed in another half day. The land is all prepared and seeding would have been completed before had it not been for a heavy shower yesterday afternoon. Every effort is being made to clean all the levees, and it is believed that the general appearance of the plats and of the grounds will be better this year than at any time in the past.

Agricultural Experiment Station, Baton Rouge (H. Stoneberg) (No report)

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (June 15) The weather during the first few days of June was generally favorable to crop growth in Missouri, but for about a week beginning June 5 it was unseasonably cool and wet. The last few days have been bright and warm.

Wheat is in very good condition over most of the State, and the harvest will begin in southern sections next week. On the Station field the wheat harvest will begin about June 21 and oat harvest about June 27. We expect to harvest about 9,000 rows of wheat and oats. The yield of wheat will be slightly above the average and that of oats considerably above the average. The recent rains caused serious lodging in the oat nursery, particularly in Fulghum and Burt strains, but caused no lodging in the wheat nursery.

Smut has been very common in both wheat and oats this season, particularly loose smut of wheat. Wheat scab has begun to develop in quantity in the last few days. There has been surprisingly little rust, though slight infection of both leaf rust and stem rust have shown up lately in the wheat. Thus far we have found stinking smut only in plats sown with inoculated seed. Some very serious cases of loose smut and scab are being found in fields of wheat inspected for approval by the extension men.

Prof. R. G. Wiggans of the New York (Cornell) Agricultural Experiment Station is visiting his parents in Columbia and will remain about two weeks. Prof. John H. Parker of Manhattan, Kans., is expected for a visit of a day or two this week-end. Prof. W. H. Eyster, who is conducting genetic investigations in this department, left on May 15 for the Bussey Institution, where he will study the chemistry of various types of inherited chlorophyll deficiencies in corn. He will return about July 1.

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (June 15)

The corn plats planted June 1 and 2 are up to a fairly good stand, considering the soil conditions. The selfed lines and the type-crossing material are especially good. This week has been dry and warm, and the early planted corn is now making good growth.

I have been appointed a member of the Plant Improvement Committee on Investigational Projects of the University, under the chairmanship of Prof. S. H. Essary.

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins) (No report)

Iowa State College, Ames (Barberry Eradication, J. H. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (No report).

Post Office Building, Urbana (Barberry Eradication, G. C. Curran) (No report).

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer) (No report).

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (No report).

College of Agriculture, Purdue University, La Fayette (Barberry Eradication, K. E. Beeson) (No report).

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, John W. Baringer) (No report).

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) (No report)

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, William W. Walker) (No report)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt) (No report).

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (No report).

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger) (June 16) The first week of June was a continuation of the rains of May, We have now had one week without rain, however, and harvest will soon be under way generally if the dry weather continues. Most of the wheat is ripe enough to bind, but wheat in this section usually is headed so harvest will not start until next week. Spring crops were washed out or buried to a considerable extent, and replanting is being done as rapidly as possible.

Seeding on the cereal project was practically finished this week with the exception of the date-of-seeding experiments. On June 5 the sorghum varietal experiments were seeded, and on the 6th the varietal and rate-of-seeding experiments with broomcorn. The crops on these plats emerged to stands 5 or 6 days later. Growing conditions are good at present.

Maximum temperature, 98° on the 15th; minimum, 54° on the 9th. Precipitation to date this month, 2.55 inches in 5 measurable rains.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker) (No report)

Hays Branch Experiment Station, Hays (B. B. Bayles) (June 14) The earlier varieties of winter wheat are partly headed, but the stand is very poor and the plats are rather weedy. The plats which were top dressed with straw last fall are in very much better condition and have headed earlier than untreated plats of the same variety used as a check. The straw held some moisture from the few light snows that fell and also protected the plants from the blowing soil this spring. The wheat on farms in Ellis county that was sown in stubble is in much better condition than that sown on plowed or fallow land.

Wheat harvest on the farms in this section will begin about July 5.

The earlier varieties of barley and oats are heading and some are fully headed. The stand on all spring grain plats is good and the straw will be rather tall and heavy.

The sorghums on the cereal project were planted the last two weeks in May and have now been thinned and cultivated. Because of the cool wet weather following planting a poor stand was obtained on plats of feterita and these were replanted.

COLORADO

Akron Field Station, Akron (F. A. Coffman) (June 15) Akron Field Station is enjoying a departure from the usual June weather conditions in this section. During the past several years we have had extremely hot, dry weather in June. The first half of June this year has been cool and an abundance of moisture has fallen. Over 5 inches of rainfall have been recorded since May 1. At present the soil contains so much moisture that it does not work well.

Crop prospects in this region are excellent. The winter wheat which survived the spring drought has stood much more than would normally have been expected, probably because of the cool moist weather during May and the first two weeks of June. In many fields the stands now appear at least 75 per cent of normal. Winter wheat is just starting to head and some fields may yield as much as 30 bushels to the acre, while many probably will produce in excess of 20 bushels to the acre.

Spring grain prospects are the best since 1915. Barley prospects are possibly better than those for spring wheat and oats. As much of the winter wheat failed to come through the winter, the acreage of spring grain, especially barley, is unusually large.

While work on the Field Station has been delayed to some extent by the rainy weather it probably is as far advanced as farm work generally in the section. During the past week the time has been spent in clearing the weeds from around the nursery and plats. The corn in the varietal experiment was replanted as gophers had taken much of it.

The spring cereals on the various projects are in excellent condition. The winter-wheat plats are rather weedy due to thin stands. The early barleys are fully headed, early oats and spring wheat are about half headed, and spring and winter rye are fully headed. Winter wheat has just started to head. The barley plats look excellent. In some plats the grain is between 3 and 4 feet tall.

Boyd R. Churchill, field assistant arrived at Akron on June 1 to assist with the Cereal Investigations experiments this season.

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren) (No report).

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel) (No report)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter) (No report)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Hutton) (No report)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brantzel) (No report)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, Geo. C. Mayoue) (No report).

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.) (June 16) Flax sown in the date-of-seeding experiment June 1 emerged June 5, the shortest period between sowing and emergence ever observed at this Station. The final seeding of the date-of-seeding experiment with flax was made June 15.

Flax sown April 15 bloomed June 12. Blister beetles are very numerous this season and are doing some damage to flax.

Hard Federation wheat and White Smyrna and Mariout barley are heading.

A. C. Dillman, agronomist in charge of flax investigations, arrived June 14.

The first half of June was very dry and warm. The precipitation for this period was only 0.16 inch. At the end of May the precipitation for the period beginning January 1 was only 3.93 inches. The average for this period is 6.09 inches so there was a deficiency of 2.16 inches for this season. Precipitation during the first half of June was about 1.60 inch below the average for this period, which makes a deficiency of about 3.75 inches for the season to date.

Dickinson Substation, Dickinson (Ralph W. Smith) (June 15) During the first week of June there was a rainfall of 1.06 inches which put all crops in excellent condition. Rapid growth has been made since that time. Rather hot, windy weather has prevailed during the past week. The surface soil is becoming dry and a good rain is needed.

The seeding of cereal crops was ended today with the last date-of-seeding of flax in the experiment combining date-of-seeding with different methods of previous soil treatment for weed control on old land. The plats already sown and emerged show enough differences to promise interesting results. Stand counts have been taken on the weeds present as well as on the flax. The stand of weeds varies greatly with different soil treatments.

Corn varieties are making rapid growth. The stand is good, not being injured by cutworms as much as during most recent years.

Winter ~~rye~~ is fully headed and winter wheat, and early varieties of spring wheat, oats, and barley are just beginning to head.

The nursery has been cultivated twice and hoed. Varietal stakes are being prepared for placing in the plats.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May) (June 15) Winter wheat has grown very rapidly during June, some of it being almost in the boot stage. Winter rye is in full head. Spring grains also have made rapid growth since the last report but they have not kept pace with the winter wheat.

Weeds are very numerous on the experiment farm but not nearly so numerous as on other farms throughout this section of the Judith Basin. Many fields appear to be 50 per cent or more of weeds when viewed from the roads. Weeds are becoming quite a problem in winter wheat production, especially those of the mustard family.

The precipitation since the last report has been very light and the surface soil is becoming dry. It was only 0.36 inch during the first two weeks of June, as compared with the average of 3.10 inches for the whole month. The maximum temperature during the first two weeks of June was 86° on the 13th and the minimum temperature 34° on the 14th.

Professors Clyde McKee and E. N. Bressman of the Montana Agricultural Experiment Station were visitors here on June 6 and 7.

State College of Agriculture, Bozeman (Barberry Eradication, W. M. Christopher) (No report).

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe) (No report)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (No report)

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones) (June 15) The weather during the first half of June has been too cool for maximum rice growth.

Rice irrigated and drained until up and then submerged 4, 6, and 8 inches deep on May 24 has emerged reasonably well for the 4 and 6 inch depths, but a high percentage of the plants on plats submerged 8 inches were suffocated. A similar experiment in which the rice was sown 10 days later and not submerged until June 4 appears to be emerging better in deep water than that sown early.

In the experiment with continuous submergence 4, 6, and 8 inches deep the rice has emerged on the plats submerged April 25, May 5, and May 15 at all depths. The stands range from good to poor. The rice submerged April 25 and May 5 is practically all erect and has a good color.

The rate-of-seeding, varietal, small increase, and nursery experiments are now being submerged.

V. H. Florell and M. N. Pope visited the station on June 10.

University Farm, Davis (V. H. Florell) (No report)

Agricultural Experiment Station, Berkeley (Fred N. Briggs) (No report)

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations.
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)



Vol. 15

June 30, 1923.

No. 15

Personnel (June 21-30) and Project Issue.

PERSONNEL ITEMS

Dr. Carleton R. Ball will leave Washington July 6 to visit field stations in the central and northern Great Plains. He will be accompanied by Dr. E. D. Ball, Director of Scientific Work. They plan to stop at Manhattan, Hays, and Colby, Kansas; Akron, Colorado; North Platte and Scotts Bluff, Nebraska; Ardmore, Oklahoma; Sheridan, Wyoming; Huntley and Moccasin, Montana; and Dickinson and Mandan, North Dakota, reaching Bozeman, Montana, in time for the conference of western agronomists July 26 to 28. They will then visit the Aberdeen Substation, Aberdeen, Idaho, from which point Dr. C. R. Ball will return east, stopping at several field stations in the upper Mississippi Valley en route.

Burton B. Bayles, junior plant breeder, who has been in charge of the co-operative cereal experiments at the Hays Branch Experiment Station, Hays, Kans., during the absence of A. F. Swanson for graduate study at the University of Minnesota, left Hays June 26 for the Sherman County Branch Station, Moro, Oreg., where he will assist D. E. Stephens in cereal breeding experiments.

Martin A. Bell was appointed July 2 as field assistant to assist in the harvesting, threshing, etc. of the cooperative cereal experiments that are being conducted at the Montana Agricultural Experiment Station, Bozeman.

Jerome K. Faulkner was appointed June 4 as unskilled laborer to assist W. W. Mackie and F. N. Briggs in the cultivation and care of the nursery and field plats in the cereal disease investigations at Berkeley.

Hurley Fellows was appointed June 20 as assistant pathologist to assist H. H. McKinney in the cooperative investigations of take-all and root-rot diseases of wheat at Madison, Wis.

John R. Fitzsimmons, field assistant in barberry eradication, who has been in Washington for the past three weeks assembling data on barberry eradication, left June 30 for La Fayette, Ind., his headquarters having been changed from Columbus, Ohio.

Dr. H. B. Humphrey, pathologist in charge of cereal disease investigations, writes under date of June 19 that his trip through California was very satisfactory.

At Davis, he found wheat plants apparently affected by take-all, Ophiobolus graminis, and at Lawndale, near Redondo, Los Angeles County, a serious and rather abundant infection of foot-rot of barley. Specimens of both diseases have been sent for laboratory examination.

Crop conditions in Oregon are exceptionally favorable for cereals. Prof. H. P. Barss, of the Oregon Agricultural Experiment Station, states that so far there have been no complaints of smut, rust, foot-rot, or other disease.

Dr. F. E. Kempton, pathologist in charge of barberry eradication, returned June 23 from a day's trip in Wythe County, Virginia, where he was called by James G. Godkin, extension pathologist of the Virginia Agricultural Experiment Station, Blacksburg, to inspect a serious outbreak of black stem rust. Doctor Kempton, accompanied by Mr. Godkin and Mr. Gelp, County Agent of Wythe County, spent the day inspecting grain fields in the southeastern portion of Wythe County and adjoining townships in Pulaski and Carroll Counties. Every grain field was attacked by black stem rust, traceable directly to the native barberry, Berberis canadensis, prevalent in that section of Virginia. In each case the rust was very severe near the barberries and from 10 to 20 rods from them. The rust became lighter as the distance from the barberries increased, diminishing to 10 per cent or less at a distance of 50 rods. The wheat near the barberries was in most cases shriveled but that at 50 rods probably will not show much damage this year. The wheat was almost ripe and in some fields it was being harvested.

Dr. C. E. Leighty, agronomist in charge of eastern wheat investigations, returned June 30, from the Middle West.

R. W. Leukel, assistant pathologist, left Washington June 22 to record data on field experiments on the control of stripe diseases of barley in the cooperative cereal disease investigations at Madison, Wis. He will return early in July.

Earl P. Link was appointed field assistant July 2 to conduct chemical analyses of wheat and corn plants grown at various temperatures in the cooperative cereal disease investigations conducted at Madison, Wis.

Robert J. Noble, collaborator in the cooperative rust epidemiology studies conducted at University Farm, St. Paul, Minn., resigned June 23 and has returned to Australia.

Merritt N. Pope, agronomist in barley investigations, returned to Washington June 30, having completed his inspection of the experimental barley nurseries in Georgia, Arizona, California, Kansas, and Colorado.

Frank D. Ruppert, was appointed field assistant July 2 to assist John H. Parker in the cereal experiments that are being conducted in cooperation with the Kansas Agricultural Experiment Station at Manhattan.

George H. Slye was appointed June 22 as Office messenger.

Luke P. Vassar, agent in the cooperative rust investigations conducted at University Farm, St. Paul, Minn., resigned May 31.

Ralph M. Williams, was appointed July 2 as field assistant to assist J. C. Brinsmade, Jr., in the cereal investigations conducted at the Northern Great Plains Field Station, Mandan, N. Dak.

MANUSCRIPTS AND PUBLICATIONS.

A manuscript entitled "Rosette Disease of Wheat and Its Control," by Aaron G. Johnson, Harold H. McKinney, Robert W. Webb, and Clyde E. Leighty, was transmitted June 19 for publication as a Farmers' Bulletin to supersede Farmers' Bulletin 1226.

Galley proof of Department Bulletin 1172, entitled "Cereal Experiments at Chico, California," by V. H. Florell, was read June 30.

Page proof of article entitled "Mode of Inheritance of Resistance to Puccinia graminis with Relation to Seed Color in Crosses Between Varieties of Durum Wheat," by J. B. Harrington and O. S. Aamodt, for publication in the Journal of Agricultural Research, was read June 23.

Page proof of article entitled "A Study of Rust Resistance in a Cross Between Marquis and Kota Wheats," by H. K. Hayes and O. S. Aamodt, for publication in the Journal of Agricultural Research, was read June 23.

Page proof of Farmers' Bulletin 1340, entitled "Polish and Poulard Wheats by John H. Martin, was read June 26.

The article entitled "The Wheat Situation in the Northern Great Plains Area," by Dr. Carleton R. Ball, was published in the Proceedings of the 36th Annual Convention of the Association of Land-Grant Colleges, 1922, p. 85-92, 6 fig.

Indiana Agricultural Experiment Station Extension Bulletin 118, entitled "Common Barberry and Black Stem Rust in Indiana," by K. E. Beeson, dated June 23, has been received.

Department Bulletin 1155, entitled "Rice Experiments at the Biggs Rice Field Station in California," by Jenkin W. Jones, was received from the Government Printing Office June 21, bearing date of June, 1923.

Farmers' Bulletin 988, entitled "Standard Broom Corn," by Benton E. Rothgeb, formerly Scientific Assistant in Grain-Sorghum and Broom-Corn Investigations, revised April, 1923, was received from the Government Printing Office June 28.

COOPERATIVE PHOTOGRAPHIC AGREEMENT EFFECTIVE JULY 1, 1923.

By agreement with the Office of Foreign Seed and Plant Introduction, the photographic laboratory formerly maintained by that Office will be conducted cooperatively with the Office of Cereal Investigations, effective July 1. Ernest L. Crandall, who has been in charge of this laboratory for many years, will continue in that position under the cooperative arrangement, and his services will be available for the Office of Cereal Investigations during the last three days of each week. Mr. Crandall is well known to the staff of the Office of Cereal Investigations, having made the photographs of wheat heads and kernels for the Classification of American Wheat Varieties and for some of the other publications of the Office.

OAT INVESTIGATIONS.

(T. R. Stanton, Agronomist in Charge)

Fall-sown Oat Nursery at Arlington Experiment Farm.

Harvesting of the fall-sown oat nursery was completed on June 25. Because of the dry weather in May, winter oats were shorter in the straw than usual, particularly the strains of the hardy Winter Turf variety. As a result of this condition, no lodging occurred, and harvesting was not difficult. Strains of early and midseason varieties such as Fulghum, Aurora, Airport, Hugheson, Selection, Hatchett, etc., apparently again will outyield those of the late-maturing Winter Turf oat. The dry, hot weather which has prevailed during the past two weeks in June ripened the Winter Turf strains a little too rapidly for best results.

A number of the 300 or more hybrid strains grown in single row rows appeared very promising, especially the selections from the crosses between Fulghum and Dwarf Culberson, and Fulghum and Hatchett. Some of these were even earlier than the Fulghum parent. However, due to the mild winter, no observations were possible on the relative cold resistance of these strains. This factor alone will determine their real value, and therefore it will not be safe to discard many of them until they are subjected to a severe cold winter.

More smut than usual was present in the nursery this season. A badly smutted plot of Aurora was grown just to the north of the nursery last year, and it is very probable that the varieties in the nursery were infected from it.

Several 5-foot rows of the hybrid which produced the prolific dwarf at the Aberdeen Substation were grown from fall seeding. About thirty of the dwarfs were produced, thus showing that the dwarfing at Aberdeen is in no manner due to the "winter habit" character.

WESTERN WHEAT INVESTIGATIONS

(J. Allen Clark, Agronomist in Charge, and John H. Martin, Agronomist).

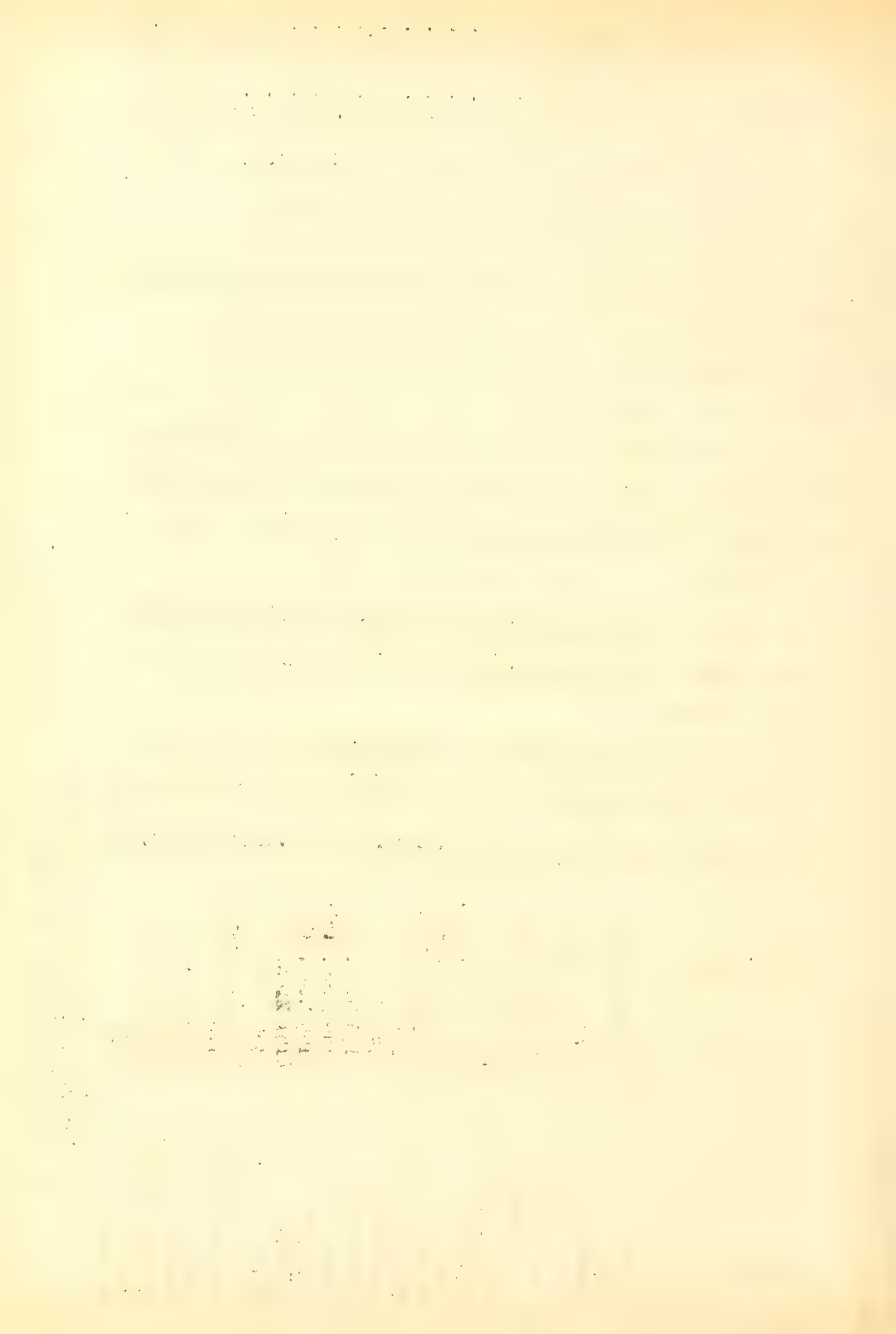
Uniform Winter Hardiness Nurseries.

In the fall of 1922, 24 varieties and strains of winter wheat were sown in triplicate row rows at 16 experiment stations in the United States and 2 in the prairie Provinces of Canada. Observations on winter survival of these varieties and strains at 16 of these stations are reported in the table which follows. At Akron, Colo., none of the varieties emerged until spring, while the report on winter survival at Moccasin, Mont., had not been received at the time the tabulation was prepared. All varieties and strains winterkilled at Fargo, Mandan, and Dickinson, N. Dak., and at Saskatoon, Saskatchewan. Slight survival of a few varieties was recorded at Brookings, S. Dak., and at Edmonton, Alberta. No winterkilling was apparent in any of the varieties or strains at Manhattan, Kans., and Lincoln, Nebr. The hardiest strain was Buffum No. 17 with an average survival of 49.4 per cent at the 16 stations, followed closely by Minhardi with an average survival of 48.5 per cent. The most marked differences in survival were shown at St. Paul, Minn., where Minhardi came through the winter without loss, and only 1 per cent of Hussar and Sherman was reported as surviving.

Average survey in spring of 1923 of 24 varieties or strains of winter wheat from Manhattan, Kansas, and in triplicate row rows to determine winter hardiness at 18 experiment stations in the northern United States and in Canada in 1922-1923.

Variety	C. I. No.	State No.	Manhattan, Kans.	Hays, Kans.	Colby, Kans.	Akron, Colo.	Archer, Wyo.	Lincoln, Neb.	Brookings, S. Dak.	St. Paul, Minn.	Ashland, Wisc.	Ames, Iowa.	Fargo, N. Dak.	Mandan, N. Dak.	Dickinson, N. Dak.	Moccasin, Mont.	Bozeman, Mont.	Saskatoon, Sask.	Edmonton, Alberta	Ithaca, N. Y.	Average 16 Stations.	Average 10 Stations.
Kharkof	1442	Mont. 36	100	33	70	^a Akron, Colo.	8	100	0	24	15	97	0	0	0	0	86	0	0	71	41.9	47.0
do	5549		100	36	90		12	100	0	37	37	95	0	0	0	0	98	0	0	71	40.4	44.6
Kharmont	6700	Kans 1664	100	32	68		12	100	0	31	44	97	0	0	0	0	98	0	0	69	40.7	45.1
Turkey (sel.)	6472		100	38	94		16	100	0	48	40	97	0	0	0	0	98	0	1	68	40.7	45.1
do (sel.)	6250	Neb. 60	100	37	51		16	100	0	63	47	95	0	0	0	0	98	0	1	63	41.9	47.0
do (sel.)	6152	Minn. 1488	100	37	45		24	100	0	86	46	92	0	0	0	0	98	0	1	70	43.7	49.9
Banat (sel.)	6676	Iowa 1946	100	25	57		17	100	0	65	38	97	0	0	0	0	97	0	0	64	41.2	46.0
Beloglina	1667		100	28	75		21	100	0	89	46	97	0	0	0	0	97	0	0	67	45.0	52.0
Kanred	5146	Kans. 2401	100	48	89		14	100	0	60	46	94	0	0	0	0	97	0	0	69	44.8	51.7
Bacska	6156	Wisc. 408	100	13	29		1	100	0	7	32	92	0	0	0	0	95	0	0	70	33.7	33.9
"Station Red"	6467	Wash. 1093	100	27	73		7	100	0	43	46	95	0	0	0	0	95	0	0	72	41.1	45.8
Blackhull	6251		100	13	41		1	100	0	2	19	87	0	0	0	0	96	0	0	73	33.2	33.1
Nebraska No. 28	5147	Neb. 28	100	23	66		1	100	0	6	35	84	0	0	0	0	98	0	0	77	36.9	39.0
Padui	6153	Minn. 1491	100	34	72		5	100	0	96	52	96	0	0	0	0	96	0	1	74	45.4	52.6
Minhardi	5149	Minn. 1405	100	45	92		12	100	3	100	53	96	0	0	0	0	98	0	1	76	48.5	57.6
Minturki	6155	Minn. 1507	100	41	71		16	100	2	95	62	98	0	0	0	0	98	0	1	68	47.1	55.2
Odessa	6151	Minn. 1471	100	34	55		11	100	1	92	54	99	0	0	0	0	97	0	1	80	45.2	52.4
Bufum No. 17	3330		100	38	74		35	100	2	99	69	99	0	0	0	0	98	0	1	76	49.4	59.1
Malakof (sel.)	6680	Wisc 11-825	100	38	65		14	100	0	92	51	98	0	0	0	0	98	0	0	73	45.6	52.9
Eureka	5170		100	27	49		7	100	0	3	39	90	0	0	0	0	96	0	0	79	36.9	39.0
Turkey (sel.)	6249	Neb. 6	100	32	71		11	100	0	53	55	97	0	0	0	0	98	0	0	69	42.9	48.6
Kharkof (sel.)	6686	Hays No. 2	100	46	76		14	100	0	29	62	98	0	0	0	0	98	0	0	62	44.9	51.8
Hussar	4843		100	13	17		2	100	0	1	33	94	0	0	0	0	96	0	0	62	32.4	31.8
Sherman	4430		100	17	38		2	100	0	1	39	98	0	0	0	0	96	0	0	62	34.7	35.6

a Wheat did not emerge until spring.
b Report not received by June 11.
c Where some killing and not complete killing occurred.



RUST INVESTIGATIONS.

(Dr. H. B. Humphrey, Pathologist in Charge).

Barberry Eradication. - Dr. F. E. Kempton, Pathologist in Charge.

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The barberry eradication project is being conducted in 13 of the North-Central grain-growing States. The cooperating agencies are: States Relations Service, U. S. Department of Agriculture; the extension divisions and experiment stations of the colleges of agriculture; the State and County farm bureaus; the State departments of agriculture, or other law-enforcement agencies of these States; and the Conference for the Prevention of Grain Rust.

The annual appropriations from July 1, 1918, to June 30, 1922, were about \$150,000. An increased appropriation, amounting to \$350,000, was available for the fiscal year beginning July 1, 1922. For the year beginning July 1, 1923, an appropriation of \$425,000 has been made, of which \$300,000 is directly available. The balance, \$125,000, can be expended if and when an equal amount is put into the campaign by the States and other cooperating agencies.

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ORGANIZATION AND PERSONNEL

July 1, 1923.

Administrative.

Washington, D. C. Office of Cereal Investigations, Bureau of Plant Industry, U. S. Department of Agriculture. Pathologist in charge, Dr. F. E. Kempton; assistant pathologist, N. Ray Carmichael.

Field Operations.Publicity.

Publicity. Cartoonist and illustrator (part-time), G. D. George; assistant pathologist, Donald G. Fletcher, cooperating with the Conference for the Prevention of Grain Rust, 510 McKnight Building, Minnesota, Minn.

Investigations. Studies of factors affecting distribution of common barberry bushes and investigation of methods for their eradication, - pathologist in charge, Noel F. Thompson, State Capitol Annex, Madison, Wis.; collaborating botanist, Dr. W. W. Robbins; chemist, Dr. E. R. Schulz; field assistants, Allan D. Dickson and Harris B. Parmele.

Epidemiology Studies, - collaborating agent, Dr. E. C. Stakman; agent in charge, Edmund B. Lambert, University Farm, St. Paul, Minn.; field assistants:

Butler, Wallace
Christensen, Jonas J.

Frolik, Frank D.
Henry, Arthur W.

Ostrom, Emil H.

Colorado: Department of Botany, Agricultural College, Ft. Collins. State Leader, Ernest A. Lungren; cooperating agent, Roud McCann, Director of Extension; collaborating pathologist, C. D. Learn; State law-enforcement agent, Dr. C. P. Gillette, State Entomologist; stenographer-clerk, furnished by the State; field assistants:

Churches, John R.

Thornton, Bruce, J.

Illinois: Post Office Building, Urbana. State Leader, Gordon C. Curran; Cooperating agent, H. W. Mumford, Director of Extension; collaborating pathologist, G. H. Dungan; State law-enforcement agent, P. A. Glenn, Chief inspector, State Department of Agriculture; stenographer-clerk, Mary A. Hopkins; field assistants:

Black, Luther A.

Byrd, Paul J.

Cornwell, Earl D.

Fielder, Virgil B.

Fobes, Franklin E.

Griffin, Edwin D.

Hafenrichter, Atlee L.

Hanly, Darrell I.

Harter, Siegfried P.

Hawkes, Joseph B.

Hayden, Lyle J.

McCarty, Mark A.

Muncie, Wendell S.

Plunkett, Orda A.

Reid, Clifford F.

Reid, Prentiss E.

Sanders, Paul T.

Stark, Orton K.

Sullivan, George F.

Twardock, James A.

Young, Otis B.

Indiana: Botany Department, Purdue University Agricultural Experiment Station, La Fayette. State leader, Keller E. Bosson; cooperating agent, C. I. Christie, Director of Extension; collaborating pathologists, Dr. H. S. Jackson and Dr. E. B. Mains; State law-enforcement agent, Frank N. Wallace, State Entomologist, Indianapolis; stenographer-clerk, Josephine M. Waldron; field assistants:

Braybrook, Lawrence L.

Burlage, Henry M.

Carman, Edmund R.

Christie, John G.

Cross, Walter M.

Dougherty, Lawrence A.

Eliason, Everett J.

Emerson, Virgil R.

Fitzsimmons, John R.

Fosbrink, Roy L.

Freeman, Verne C.

Goodale, Charles D.

Graham, Wilbur F.

Heine, Albert W.

Heller, Walter E.

Johanningsmeier, Otto G.

Leer, Wayne E.

Magart, Ralph J.

McCrea, Forrest D.

McKenzie, Glenn H.

Miller, Charles H.

Palmer, C. Mervin

Ridenour, William W.

Rogers, Ralph H.

Scearce, Charles G.

Snively, Hubert K.

Thomas, Donald B.

Wegel, Harold J.

Worth, Bruce V.

Young, Wilfred B.

Zumstein, Reginald B.

Iowa: Iowa State College Ames. State leader, Jesse H. Muncie; cooperating agents, R. K. Bliss, Director of Extension and R. H. Porter, Extension Pathologist; collaborating pathologists, Dr. I. E. Melhus and S. M. Dietz; State law-enforcing agent, Dr. C. J. Drake; stenographer-clerk, Gladys V. Ross; field assistants:

Abbott, Ernest V.	Kent, James K.	Reeves, Kenneth
Adamson, Ralph W.	Larson, Raymond T.	Rosenberger, Elmer I.
Brookhart, Charles E.	Lennox, Arthur Gray	Smith, Marion A.
Burns, Morrison H.	Mendell, Frank H.	Solheim, Wilhelm G.
Fitzpatrick, Leo S.	Morling, Edgar S.	Stockdale, Guy A.
Fowler, Jesse L.	North, Henry F. A.	Thompson, James W.
Hill, Darrell	Peak, Charles O.	Yount, Marion E.
Inman, Forrest G.	Porter, Donald R.	

Michigan: Agricultural College, East Lansing. State leader, Walter F. Reddy; cooperating agent, R. L. Baldwin, Director of Extension; State law-enforcement agent, L. R. Taft, State Inspector of Nurseries; stenographer-clerk, Georgia M. Haughey; field assistants:

Cash, Justin C.	Lafene, Ben W.	Richards, Ronald G.
Cole, John R.	Lenz, Carl H.	Rieman, Robert S.
Daniels, Murillo A.	Lewis, Herdis L.	Ripatte, Carl H.
Dressel, Elvin D.	Liorot, Ernest L.	Smith, Roscoe G.
Edmond, Joseph B.	Mathieson, Sigurd T.	Stewart, Dewey
Fick, George L.	McIntyre, Charles W.	Strong, Forrest C.
Francis, Milton J.	Meyer, Leslie J.	Swartz, Delbert
Hultman, Vivian J.	Moore, Lucius H.	Taylor, Maurice R.
Jennison, Harry M.	Olson, George W.	Tilford, Paul E.
Kuhn, George W.	Parson, Howard E.	Wellman, Paul L.

Minnesota: University Farm, St. Paul. State leader, Leonard W. Melander; cooperating agent, F. W. Peck, Director of Extension; collaborating pathologists, Dr. E. M. Freeman and Dr. E. C. Stakman; State law-enforcement agent, A. G. Ruggles, State Entomologist; stenographer-clerk, Helen W. Barrett; field assistants:

Adams, John W.	Emerson, William M.	Purdy, David W.
Anderson, G. George	Groesbeck, Robert M.	Quam, Dwight L.
Benner, Jefferson S.	Johnson, Eddy R.	Rodenhiser, Harman A.
Bevan, Roland C.	Johnson, Everett R.	Shepard, Vard M.
Craigie, John H.	Kunkel, Paul W.	Sjowall, Alfred L.
Douglas, Robert M.	Mann, Spencer A.	Steinbaur, George P.
Douglass, Frank A.	Morris, Harold P.	True, Afthur W.
Dow, Lewis L.	Nelson, Lloyd I.	Vacha, Gerald A.
Dunn, Stuart J.	Peterson, Arthur G.	Van Cleve, Charles W.
		Wood, Lawrence E.

Montana: State College of Agriculture, Bozeman. State Leader, Warren N. Christopher; cooperating agent, F. S. Cooley, Director of Extension; collaborating pathologist, H. E. Morris; State law-enforcement agent, J. C. Woods, Horticultural Inspector; stenographer-clerk, Florence L. Markin; field assistants:

Cashmore, Herbert D.

Paugh, John C.

Popham, William L.

Nebraska: College of Agriculture, University Farm, Lincoln. State leader, Albert F. Thiel; collaborating agent, W. H. Brokaw, Director of Extension; collaborating pathologist and law-enforcement agent, Dr. G. L. Peltier; stenographer-clerk, Burnetta Rose; field assistants:

Adams, Harold M.
Barnett, Harold M.
Barth, Charles E.
Brunner, William E.
Cole, Ralph H.
Dittus, Benjamin F.
Fitzpatrick, Thomas J.
Friedli, Jacob
Hunt, B. W.

Jones, Gomer V.
Koontz, Thomas L.
Kotlar, Edmund J.
Moore, John L.
Pinkerton, George R.
Riddick, Julian W.
Robrbaugh, Percy
Rulla, Loyal L.
Samsel, Leon G.

Samson, Rayburn W.
Schaal, Lawrence A.
Scrivner, Forrest J.
Simpson, Willard J.
Summers, Eaton M.
Thurber, Claude W.
Tullis, Edgar C.
Weir, Robert E.

North Dakota: Agricultural Experiment Station, Agricultural College, P.O. State leader, George C. Mayoue; cooperating agent, G. W. Randlett, Director of Extension; collaborating pathologist, H. L. Bolley; State law-enforcement agent, Joseph A. Kitchen, Commissioner of Agriculture; stenographer-clerk, furnished by the State; field assistants:

Archer, Verne R.
Arnold, Lyril H.
Baden, Carl H.
Bairey, George B.
Benson, Christian S.
Bentley, Ronald C.
Boise, Philip H.
Brush, Harper J.
Carlson, Robert H.

Deach, E. Verle.
Denis, Daniel J.
Ferguson, Earl G.
Fogarty, Harland J.
Herbison, Herbert W.
Kadlec, George C.
Kjorlie, Hilmen E.
Mowris, Lyle E.
Roberts, Franklin W.

Bumpeltes, Ben P.
Severson, Leonard N.
Tarbell, Winfield S.
Trumbull, Francis W.
Vaaler, Oren H.
Wall, Adolph
Wells, Charles F.
Willson, Fred S.

Ohio: Botany Department, Ohio State University, Columbus. State leader, John W. Baringer; cooperating agent, H. C. Ramsower, Director of Extension; collaborating pathologist, Dr. W. G. Stover; State law-enforcement agent, Chief of the Division of Plant Industry, Richard Faxon; stenographer-clerk, Mrs. M. E. Joice; field assistants:

Anderson, Malcolm G.
Aneshansel, Carl W.
Atwood, Harry
Brooks, Albert N.
Buckman, Marcus E.
Cowdrey, George C.
Dobbins, Earl K.

Ellis, William, Jr.
Hagelbarger, Ralph H.
Hummon, Clair T.
Humphrey, Sylvester S.
Jones, Thomas H.
Meyer, Bernard S.
Minneman, Paul G.

Parish, Cloyce L.
Runnels, Harmon A.
Settle, Edwin T., Jr.
Shackson, Clyde F.
Wagner, John A.
Wright, Cyrus B.

South Dakota: College of Agriculture, Brookings. State leader, Lynn D. Hutton; cooperating agent, W. F. Kumlien, Director of Extension; collaborators, Dr. A. M. Hume and Dr. E. J. Petry; State law-enforcement agent, H. C. Severin, State Entomologist; stenographer-clerk, Emma Fairchild; field assistants:


Aldrich, Merton	Haines, Augustus T.	Sculley, Jesse C.
Billings, Floyd D.	Hume, Albert T.	Schutte, Clarence H.
Bricton, Abner J.	Hutton, Paul M.	Seeman, Fredrick A., Jr
Bulger, Raymond	Korstad, Elvin H.	Soule, William K.
Caldwell, Ralph M.	Malmer, George T.	Starr, G. H.
Boffey, Frank	Mateer, Harry A.	Staven, Julian I.
Eberlein, Louis A.	Mears, Kirk T.	Thune, Leonard A.
Enright, Harold J.	Michaels, Walter H.	Underwood, Paul C.
Errington, Paul L.	Moore, John W.	Walter, Glenn L.
Fairchild, Jasper S.	Murray, Joe F.	Welch, Frank F.
Fish, Francis F.	Rice, Donald T.	Welch, Earl I.
		Wimer, Harry

Wisconsin: Department of Agriculture, State Capitol Annex, Madison. State leader, William A. Walker; cooperating agents, K. L. Hatch, Director of Extension, and R. E. Vaughn, Extension Pathologist; collaborating pathologists, Dr. L. R. Jones and Dr. J. G. Dickson; State law-enforcement agent, Stanley B. Fracker, State Entomologist; stenographer-clerk, Ida T. Goul; field assistants:

Campbell, Everette L.	Harrison, Carter M.	Meloche, Villiers W.
Cheney, Lellen S.	Holt, Earle F.	Rankin, Eugene J.
Corbett, Kenneth H.	Horne, Daniel O.	Schaars, Marvin A.
Damsheuser, Carl W.	Horton, George W.	Seymour, Walter J.
Davis, George K.	Kaasa, Leonard J.	Spear, Byron H.
Edwards, Harry L.	Kempton, Joseph G.	Stevens, Henry
Federer, Leo J.	Knutson, Arthur M.	Stiles, Hugh R.
Feldman, Samuel S.	Lathrope, Howard R.	Sykes, Robert C.
Fiedler, George A.	Longenecker, George W.	Webber, Clarence W.
Gunderson, Frank L.	McAleavy, Charles J.	Weyker, Clem J.
Harrington, John T.	McKay, Frank D.	Wolfson, Alfred M.

Wyoming: College of Agriculture, University of Wyoming, Laramie. State leader, Ralph U. Cotter; cooperating agent, A. E. Bowman, Director of Extension; State law-enforcement agent, A. D. Faville, President, State Board of Horticulture; stenographer-clerk, furnished by State.

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15

July 10, 1923

No. 16

Personnel (July 1-10) and Field Station (June 16-30) Issue.

PERSONNEL ITEMS

The following have been authorized by the Acting Secretary to attend the Seventh Annual Conference of Western Agronomists to be held at Bozeman, Mont., July 26 to 28: J. Allen Clark, J. H. Martin, T. R. Stanton, and A. C. Dillman, of the Washington office, and V. H. Florell, University Farm, Davis, Calif.; D. E. Stephens, Sherman County Branch Station, Moro, Oreg.; G. A. Wiebe, Aberdeen Substation, Aberdeen, Idaho; R. W. May, Judith Basin Substation, Moccasin, Mont.; and R. W. Smith, Dickinson Substation, Dickinson, N. Dak. Papers will be presented by Messrs. Florell, Stephens, Smith and Clark.

Miss Marion A. Griffiths, assistant pathologist, who has been stationed at the Missouri Botanical Garden, St. Louis., since September, 1922, in the conduct of research on the flag smut of wheat in cooperation with that institution and the Illinois Agricultural Experiment Station, returned to Washington July 2 to resume laboratory investigations of the smut problem.

Dr. Harry V. Harlan continues to write interestingly and humorously of his experiences in getting out of one hot country into another in the pursuit of seed and plant material. His arrival in India was later than was expected, because he found it advisable to remain longer in North Africa. After traveling for four days through the scorching heat of the plains of India he reached Simla from Poona on June 5. The sight of the foothills of the Himalayas, even at a distance of 75 to 100 miles, was a great relief. At Simla Doctor Harlan expected to plan an itinerary for further travel through India and Abyssinia.

While still in Egypt Doctor Harlan was told that his chances probably would be slight for getting into Nepal. Members of the 1922 Mt. Everest expedition were not permitted to cross even one corner of that country for the purpose of checking their locations. As is well known, Nepal is forbidden territory to "foreign devils."

Dr. A. G. Johnson, pathologist in charge of the investigation of diseases caused by imperfect and sac fungi, left Washington July 6, accompanied by Dr. W. H. Tisdale, pathologist in charge of smut investigations, and C. E. Temple, plant pathologist of the Maryland Agricultural Experiment Station. They will inspect the cereal disease experiments that are being conducted cooperatively with the New York State (Cornell) Agricultural Experiment Station at Ithaca, N. Y. Doctors Johnson and Tisdale have been authorized by the Acting Secretary to attend the meetings of the American Phytopathological Society to be held at Geneva, N. Y., from July 9 to 13, inclusive.

Dr. F. E. Kempton, pathologist in charge of barberry eradication, left Washington July 10 for a tour of inspection of the barberry eradication area. At Toledo, Ohio, he will be met by Noel F. Thompson, pathologist in the investigation of chemical methods of eradication, Dr. W. W. Robbins, collaborating pathologist in ecological studies, and John W. Baringer, State leader of barberry eradication in Ohio. They will visit the areas in 7 counties in Ohio where experiments are being tried with chemical methods of destroying barberry bushes. About July 18 Doctor Kempton will be joined by Harrison Fuller, of Minneapolis, secretary-director of the Conference for the Prevention of Grain Rust, and they will travel by automobile throughout the barberry States.

Dr. C. E. Leighty, agronomist in charge of eastern wheat investigations, left Washington July 6 on an automobile trip through Maryland, Pennsylvania, and New York, to inspect fields of wheat, rye, and buckwheat en route and to make photographic views of fields and field operations. He also will confer with officials of agricultural experiment stations in the States named and inspect cooperative cereal experiments at Ithaca and on outlying fields in New York State.

R. W. Leukel, assistant pathologist, returned to Washington July 9 after spending two weeks at Madison, Wis., inspecting the experiments with stripe disease of barley. In addition to recording data on the experimental plats at Madison he made a limited survey of the barley region in the vicinity of Madison. The only barley fields containing an appreciable infection of barley stripe were found on the experiment farm at Madison, where Wisconsin Pedigree No. 6 is grown. Most of the fields examined contained only a trace of the disease. Several fields north of Madison were found to be quite severely infected with net blotch caused by Helminthosporium teres, although in general this disease is not very common this year.

Malcom B. Melroy, field assistant under the direction of Dr. W. H. Tisdale, at Arlington Experiment Farm, completed the work for which he had been appointed and his appointment was terminated June 13.

F. D. Richey, agronomist in charge of corn investigations, returned July 4 from a conference with officials of the New York State (Cornell) Agricultural Experiment Station at Ithaca, N. Y., regarding cooperative corn experiments.

T. R. Stanton, agronomist in charge of oat investigations, left July 4 to inspect experiments with oats, particularly to study the identification nurseries at Ames, Ia., Dickinson, N. Dak., and Aberdeen, Idaho. Mr. Stanton's itinerary will include Columbus, Ohio, La Fayette, Ind., Urbana, Ill., Ames, Ia., St. Paul, Minn., Mandan and Dickinson, N. Dak., Moccasin and Bozeman, Mont., Aberdeen, Idaho, Akron, Colo., and Manhattan, Kans.

C. W. Warburton attended the session of the Crop Reporting Board, of the Bureau of Agricultural Economics, July 9, as an observer.

VISITORS.

Juan Ballesteros and Gonzalo Robles, two agronomists in the service of the Mexican Government, particularly interested in the production and breeding of corn and wheat, conferred with specialists of the Office June 9 and on the following day were conducted over the experimental plats at the Arlington Experiment Farm.

Walter Fischer, formerly of the Office of Seed and Plant Introduction, now connected with the New York State School of Agriculture, St. Lawrence University, Canton, N. Y., was an Office visitor July 9.

Paul H. Kirk, agricultural statistician in the Bureau of Agricultural Economics, with headquarters at St. Paul, Minn., who was in Washington as a member of the Crop Reporting Board, was an Office visitor July 9.

Jean Nestor, of Bucharest, Manager of the Royal Estates, who has been studying agricultural conditions in the United States for the past several weeks, was an Office visitor July 5, when he arranged for further conferences on later dates and inspection of the cereal experiments on Arlington Experiment Farm.

MANUSCRIPTS AND PUBLICATIONS.

Second page proof of article entitled "The Mode of Inheritance of Resistance to Puccinia graminis with Relation to Seed Color in Crosses between Varieties of Durum Wheat," by J. B. Harrington and O. S. Aamodt, for publication in the Journal of Agricultural Research, was read July 10.

Second page proof of the article entitled "A Study of Rust Resistance in a Cross between Marquis and Kota Wheats," by H. K. Hayes and O. S. Aamodt, for publication in the Journal of Agricultural Research, was read July 10.

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs) (No report)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor) (July 10) Threshing operations at Arlington Experiment Farm were begun July 2 and favorable weather has permitted us to proceed rapidly with them. The yields of the fall-sown cereals so far threshed have averaged higher than usual. Barley in particular produced an excellent crop. The wheat yield is also good and the grain is showing less yellowberry than in most previous years. The ratio of grain to straw, however, is low.

The average yields of the winter barley varieties from duplicated fortieth-acre plats as compared to the average of the four neighboring checks of Tennessee Winter, are as follows:

Yields of Fall-sown Barley at Arlington Experiment Farm.

Variety or Selection	C.I.No.	Acre yield, bu.	Check yield, bu.
Wisconsin Winter	2159	55.3	37.4
Tenkau	646	57.6	37.4
Selection No. 52		53.4	33.6
Selection No. 66		55.3	39.3
Alaska		60.6	47.6
Wisconsin Winter	2167	46.2	33.6
Selection No. 46		46.0	33.6
Han River	2163	47.7	36.1
Selection No. 12		49.7	38.4
Selection No. 47		58.0	47.6
Orel	351	47.2	36.1
Selection No. 27		49.3	38.4
Scottish Pearl	277	47.3	37.4
Nakano Wase	2166	45.1	36.1
Selection No. 25		45.1	39.3
Nakano Wase	754	41.4	36.1
Selection No. 61		52.1	47.6
Selection No. 24		43.1	39.3
Selection No. 28		37.3	33.6
Selection No. 57		50.6	47.6
Selection No. 21 and 23		39.9	38.4
Selection No. 45		35.1	38.4
Pidor	901	32.3	37.4
Tennessee Beardless No. 6		25.7	32.5
Tennessee Winter	257		
(Average of 24 check plats)		33.7	

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love)
(July 2) The weather during June has been rather unfavorable for the development of small grains. It has been very dry and we had some unusually warm weather for this time of year, the result being that oats and barley are heading very short and indications are for a rather light crop unless we have extremely favorable conditions from now on. Wheat has fared better but the crop will not be unusually heavy in the vicinity of Ithaca.

Indications are that there will be considerable damage to wheat due to the depredations of the sawfly. This seems to be very common around Ithaca and in the neighborhood of Batavia.

The wheat and oat hybrids which were grown in the greenhouse have been harvested and a large quantity of valuable material has been obtained. In certain Aegilops-wheat crosses a considerable number of seeds have developed on the F_1 plants. These are being saved for both genetic and cytological analyses. Considerable material has been collected where the purple-kerneled Abyssinian wheat has been used as one parent, and work is now being conducted to determine the mode of inheritance of this character.

W. T. Craig, who made the western trip to take notes and harvest the material grown in California, will return to Ithaca in a few days in time for the harvest here.

During the past week the field work was visited by a group of extension agronomists from the Eastern States. We also held our Farmers' Field Days June 27, 28, and 29. The experiments were visited by about 125 people.

C. F. Noll, of State College, Pa., who has been conducting research in the inheritance of earliness in oats as part of the requirement for the degree of Doctor of Philosophy at Cornell, has finished his manuscript and his paper on this subject will soon be ready for the press. Some very interesting results have been obtained which may be of much practical importance, particularly in the sections where early oats are needed.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (No report)

Agricultural Experiment Station, Baton Rouge (H. Stoneberg) (No report)

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (July 2)

During the latter half of June the weather in Missouri was favorable to field crops. The third week of June was characterized by high temperatures and occasional showers, and the fourth week by rather cool weather with frequent rain. Wheat ripened normally, and the crop will be above the average. The wheat harvest is now about completed over the State as a whole. Oats are now being harvested, and in many sections are in splendid condition, though the crop for the State as a whole is not much above the average. Oat harvest is now in full swing in central Missouri. Corn made excellent progress during the last two weeks, and is now about waist-high in central Missouri.

On the station field we have completed the wheat harvest, and will complete the oats harvest this week. Our oats were very badly lodged by driving rains on June 26 and 27, and the harvesting therefore is very difficult. We were pleased to find that one of our recent pure-line selections in a 16-row plat withstood these conditions almost perfectly, though all other oats on the field were badly lodged.

Corn pollination on the station field will begin in about two weeks.

Dr. C. E. Leighty was with us June 24, returning Sunday night to Granite City to continue his work on the flag smut plats there.

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (July 7) The corn experimental field received its first cultivation June 16, was cultivated again June 26, and the third time July 3. Thinning and a thorough hoeing was given June 29 and 30 and the field is now in good condition.

On June 22 we harvested the wheat plats of Doctors Leighty and Mains.

IOWA

Agricultural Experiment Station, Ames (L. C. Burnett) (June 26) Early oats are all in full head, late oats are in first head. The Burt selections are dated first ripe today. It looks now as if the early oats would be ripening the first week in July and the other varieties following along.

Arthur A. Bryan and Merle T. Jenkins attended the meeting of the American Society of Agronomy at Urbana, Ill., but owing to the condition of the crops it was impossible for the writer to leave.

The corn plats are nearly normal in growth by this time. They have grown very rapidly during the last two weeks and have made up most of their lack of growth during the first month.

Iowa State College, Ames (Barberry Eradication, J. H. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (No report)

Post Office Building, Urbana (Barberry Eradication, G. C. Curran) (No report)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer) (No report)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (No report)

College of Agriculture, Purdue University, La Fayette (Barberry Eradication, K. E. Beeson) (No report)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, John W. Baringer) (No report)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) (No report)

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, William W. Walker) (June 19) Original farm to farm surveys have been started in Washington, Sheboygan, Fond du Lac, Green Lake, Marquette, Waushara, Winnebago, and Pierce counties. George W. Horton and Howard R. Lathrope have located an area of escaped bushes spread from an old hedge in the southwest corner of Waushara county. This is the first area of escapes found this season.

The use of chemicals is looked upon favorably by property owners and the scouts also prefer the use of chemicals to digging. The scouts carry chemicals with them at all times.

Several areas of escapes have been or are to be treated. A treatment of the large area at Black Earth will be started with a carload of salt. The areas at Marshall and Jefferson are being treated; the areas at Wyoming, Iowa county, and at Lodi, were treated last week, and areas at Belleville, Dane county, and Dodge county will be treated at once. The resurvey of Green and Rock counties is about completed. Many sprouts and one or two new findings have been reported.

The scouts driving the new U. S. Trucks are quite well satisfied with them. The four trucks in use have "broke in" nicely.

Rust was found on oats on the Schuster farm at Marshall, on June 14, by Clarence W. Weber. Rust also was found on the oats in the trial plats at Madison on June 19. The barberries located so far this season in the farm-to-farm survey were quite generally rusted. Lellen S. Cheney also reported some rusted barberries in the center of the city of Milwaukee. Dr. E. R. Schulz also reports rust on his potted barberries in the greenhouse.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report).

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (No report)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger) (June 30) Growing conditions for sorghums and broomcorn were excellent during the last half of June, the warm dry weather causing rapid growth for the first time this season. The sorghums which were seeded on June 14 and 15 emerged to stands in 4 days, which indicates very good growing conditions.

Wheat harvest is well under way, with good weather until to-day, as the shower of 0.21 inch which fell last night is the only precipitation since June 20th. Harvest is now about half completed.

Practically all of the sorghums and broomcorn which are large enough have been thinned to comparable stands and cultivated since thinning. With the exception of the plats seeded on the two earlier dates in the date-of-seeding experiment, good stands of all varieties were obtained this season.

Maximum temperature for last half of June 99° on the 25th; minimum for same period, 51° on the 29th. Precipitation, 1.41 inches on the 19th, 0.03 inch on the 20th, and 0.31 inch on the 30th. Total precipitation for the month of June, 4.20 inches.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker) (No report)

Hays Branch Experiment Station, Hays (A. F. Swanson) (June 30) One of the most damaging hail storms since 1909 occurred in the vicinity of Hays during the afternoon of June 29. The damage is particularly great at this time as all of the grain crops were approaching the ripening stage.

The small grains on the experimental plats on the cereal project were completely destroyed with the exception of two small increase fields and five plats of barley which were harvested just previous to the storm.

The corn and sorghums were riddled and beaten into the ground. While the corn probably will suffer some permanent injury it is believed that the sorghums will be but temporarily delayed in development and growth.

The hail storm in the afternoon was followed that night by high wind and rain. In some localities the wind amounted to a small tornado and considerable damage to farm buildings resulted throughout the county. As nearly as can be estimated the hailed-out area was about 40 miles long and 7 miles wide.

Wheat prospects in the county varied. In some localities favored with a good rain last fall the wheat was somewhat better than normal. In other sections in which moisture was lacking last fall the wheat was thin and weedy. Oats and barley would have made yields of 25 to 40 bushels to the acre. The spring wheat suffered from the drought 10 days ago. Prelude was the most promising variety of the spring wheats.

B. B. Bayles, who has had charge of the cereal work at Hays during the writer's absence in Minnesota, left for Moro, Oregon with his bride, June 26.

M. N. Pope and J. Allen Clark of the Office of Cereal Investigations and John H. Parker, of the Kansas Agricultural Experiment Station, were Station visitors June 25.

COLORADO

Akron Field Station, Akron (F. A. Coffman) (July 3) Weather conditions during the last half of June were much less favorable than during the first half of the month. The temperatures during the period were mild but several periods of extremely high winds greatly reduced the soil moisture supply. Very little rain fell during the period and the soil is now very dry. All crops need moisture badly.

Crops generally in the section are not in as good condition as on June 15. Winter wheat is very backward due to its having emerged so late in the winter. Spring wheat has suffered considerably from the high winds. Barley was injured by the winds but was far enough advanced so that the present dry weather will injure it much less than it will winter and spring wheat. Corn is making a very rapid growth. The high winds damaged corn much less than the small grains.

Seeding of cereal crops on the Station was completed early during the period. About 40 per cent more cereal work is being conducted this year than in 1922. Some 6,750 plats and rows of cereals are being grown this year. In spite of the unfavorable weather during the past two weeks most of the cereal crops are in fair condition. As a whole crops are in better condition on the Station this year than usual on July 1. Although we have had considerable moisture this spring the farm is exceptionally free from weeds.

Many of the early varieties of spring grain have started to turn. The early barley looks exceptionally good. A few plats may yield close to 50 bushels per acre. The later barleys have just reached the full heading stage. As the supply of moisture is reduced they cannot yield so much as the earlier varieties.

The early oats have been headed for some time, and some of the earliest varieties have started to ripen. The better plats on fallow probably will yield close to 50 bushels to the acre this year. The Akron selection from Burt, No. 916, looks exceptionally good. This selection is very uniform for a Burt strain and is as early as if not slightly earlier than Kanota or Fulghum. Many of the selections of Burt in the nursery look very promising.

Among the spring wheats Hard Federation, Prelude, and Quality are making the best showing of the common spring varieties. The Akron selection from Annetka, made by Clyde McKee when he was at Akron, looks the best of any of the durumms. Hard Federation and Prelude have started to ripen. In the spring wheat nursery several selections from a cross of Prelude x Marquis made by V. H. Florell look promising. A few of the selections made at Akron in 1920 also look promising.

Winter wheat is very backward this season as it did not emerge until late in the winter or early in the spring. At present it looks as though harvest of the spring cereals will be almost completed before the winter grain is ripe. Practically none of the winter wheat is as yet fully headed. If the unfavorable weather conditions continue it is likely that the yields of winter grain will be more seriously reduced than the yields of the spring grains. Some of the selections in the winter wheat nursery look very promising. The early selection from Kanred made at Akron in 1921 has bred true for that character for the past 3 years. It appears to be about as early as Clark Blackhull. A number of the Kanred x Marquis strains received from Manhattan, Kans., give promise of being earlier than Kanred.

The annual station picnic was held June 27. The weather was unpleasant due to a high wind blowing all day, but a crowd estimated at 2,000 people was present. The talks of the day were given by Miss Kitty Washington and Alvin Steinel of the Colorado Agricultural College.

During the past two weeks the following persons have visited the Station: E. A. Lungren, State leader of barberry eradication in Colorado, June 20; W. T. Craig, department of plant breeding, Cornell University, Ithaca, N. Y., June 25; M. N. Pope, agronomist in barley investigations of the Washington office, Miss Kitty Washington and Alvin Steinel, of the extension department of the Colorado Agricultural College, George Wheeler, editor of Western Farm Life, Denver, and R. W. Vance, county agent, Washington County, Colo., June 27; and J. Allen Clark, agronomist in charge of western wheat investigations, June 27 and 28.

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)
(No report)

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel) (No report).

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter) (No report).

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Hutton) (June 22) The entire month of June is being spent on resurvey. An average of 10 field men will be used for the entire month. The resurvey proves the contention that digging is futile and that chemical eradication must be resorted to in this State. The Lake Preston hedge, which has been worked at by both Federal men and property owners since 1917, is found to have several hundred sprouting bushes and several thousand new escaped bushes. The same is quite true of the Lone Rock hedge in Moody County. Fair roads and excellent weather is helping to speed up the resurvey so that all of the important hedges of the State will have been visited before July 1.

Uredinial infection was found June 9 just south of Sioux Falls within 20 feet of a hedge of barberries where the first aecial infection had been found May 8. So far this is the only place in the State where uredinial infection has been found.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)
(No report).

Agricultural Experiment Station, Agricultural College (Barberry Eradication, Geo. C. Mayoue) (June report) Resurvey has been carried on by two men since May 8. A total of 95 sprouting bushes has been found on properties that were covered in 1918 and 1919. These sprouts varied from 6 inches to 2 feet in height and showed light to moderate infection. One planting of 10 bushes at Mapleton, Cass Co., was located which had not been found previously, and 38 bushes were reported by county agents and property owners from the western part of the State where the original survey has not been completed.

All plans have been perfected for launching the campaign for the season beginning July 1. The entire force of 30 men will be concentrated for resurvey work in the counties in the Red River Valley. After this area has been covered the men will move to the western part of the State to complete the original survey. Eight men will be employed on State funds.

The first infection on barberries was found on sprouting bushes in Fargo May 22, and the first spread of rust from barberries was found June 16, adjacent to the planting found in Cass County. This infection was very light and did not extend more than 4 feet from the bushes.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.) (July 3) The weather during the last half of June has been warm with frequent showers, so that crops have made rapid growth and recovered somewhat from the effects of the drought during the first half of June.

All of the wheat varieties in the varietal plats sown April 27 were fully headed July 2. First heading was noted June 21 in the Kota x Hard Federation hybrids sown May 5, and practically all of them are headed at this time. Practically all of the oats and barley varieties sown April 28 are fully headed. Traces of stem rust were noted on wheat June 27, and considerable leaf rust has appeared recently. Very little stem rust is in evidence at this time.

Crops on the Station are probably^a little better than they have been for some years at this time. Wheat fields in the immediate vicinity of Mandan are heading very short and are likely to produce low yields.

Ralph M. Williams, a student in agronomy at the University of Minnesota, reported for duty as field assistant June 21. John L. Federer resigned effective June 27.

A. C. Dillman left July 1 for a trip into South Dakota. Dr. H. B. Humphrey and W. E. Brentzel were visitors at the Station July 3.

Maximum temperature for the last half of June was 90°, on June 16 and 22; minimum, 41°, June 27. Precipitation was 1.78 inch, mostly falling in small showers recorded on 10 of the 15 days.

Dickinson Substation, Dickinson (Victor V. Sturlaugson for Ralph W. Smith)

(June 30) During the latter half of June there has been a rainfall of 3.43 inches occurring at quite regular intervals, consequently all the crops in plats and nursery are making good growth.

First heading has been recorded on all varieties of wheat, oats, and barley in the varietal plats, and full heading on some. First heading has also been recorded on most varieties in the nursery.

Flax in the varietal plats is just beginning to bloom. In the date-of-seeding experiment, seedings made April 21 and May 1 are in full bloom. The corn is making very rapid progress also. Several crosses of each of the following varietal combinations of wheat have been made: Kanred x Minhardi, Kanred x Buffum, Nodak x Kubanka 144, Kubanka 74 x Kubanka 144, Kubanka 74 x Nodak, Kota x Marquis, Quality x Ruby, and Quality x Marquis.

One plant of a winter wheat-rye hybrid was discovered in the winter nursery. That plant is being crossed back with Kanred winter wheat.

The Quality wheat from California which is being grown here in the varietal plats for the first time this year seems to be a promising variety. It was among the first to reach the stage of full heading.

The varietal stakes have been placed in the plats.

Ralph W. Smith is away on a two-week vacation visiting his old home at Stanberry, Mo.

MONTANA

Judith Basin Substation, Moccasin (Ralph W. May) (June 28) Precipitation has been recorded each day since June 16 except June 25. Since June 16, 4.62 inches of precipitation has been recorded, while the total for the month to date (June 28) has been 4.98 inches. This is in comparison with 3.10 inches as the average for June during twenty-five years.

As a result of the wet weather no field work has been done for almost two weeks. Weeds are gaining much headway. The last date of corn planting in the rate and date test remains to be made.

Winter wheat and the earliest varieties of spring grain are heading. Many of the barleys in the nursery are almost in full head. Spring grains on the experiment farm and also throughout this section are looking unusually good. Winter wheat is very weedy.

F. B. Linfield, Director of the Montana Agricultural Experiment Station, visited here on June 19 and J. M. Stephens of the Office of Dry Land Agriculture, was here on the following day.

Elmo A. Briggs reported for duty as field assistant on June 20.

Maximum temperature during the month was 36° on the 13th; minimum, 34° on the 14th.

State College of Agriculture, Bozeman (Dorberry Eradication, W. N. Christopher (June 30) No rust has been observed on cereals as yet. Small local damage has been caused by hail in scattered areas over the State.

Wheat is somewhat retarded because of cold, wet weather and consequent late planting of grain.

A 50 per cent infection of Ustilago striaeformis on timothy was found near Lewiston, June 29.

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe) (No report)

OREGON

Sherman County Branch Station, Micro (D. E. Stephens) (No report)

CALIFORNIA

Biggs Rice Field Station, Biggs, (J. W. Jones) (No report)

University Farm, Davis (V. H. Florell) (June 30) The weather has been very cool and pleasant during June at Davis.

The long cool spring has been very favorable for cereal crops, so that high yields of grain of good quality have been produced in most sections of the Sacramento Valley. The barleys ripened the latter part of May and in early June, most varieties of wheat maturing 10 days to two weeks later.

Harvesting has proceeded satisfactorily. Everything is now harvested except a few varieties in the wheat classification nursery and the F₃ and F₄ hybrid wheat material. A number of these hybrids are being left to make observations on shattering before selections are made. Others will be harvested as rapidly as possible. The nursery barleys have been threshed and threshing of wheat nursery material is in progress. Threshing of the varieties in the plat experiments will be begun next week.


Merritt N. Pope of the Washington Office arrived at Davis on June 6 and remained until June 18. He studied and took notes on the barley classification material. John H. Martin arrived on June 10 to study and harvest hybrid wheat material. He left for Corvallis on June 26. Dr. H. B. Humphrey visited the cereal experiments on June 11. Other visitors during June were Jenkin W. Jones of the Biggs Rice Field Station, Roland McKee, of the Office of Forage Crop Investigations, B. A. Mason, Field Husbandman at the Guelph Experiment Station, Guelph, Ontario, Canada.

Agricultural Experiment Station, Berkeley (Fred N. Briggs) (No report)

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)



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No. 17

Personnel (July 11 - 20) and Field Station (July 16--15) Issue

PERSONNEL ITEMS

Dr. Carlston E. Ball writes on July 12 and 14 of the difficulties of automobile travel in western Kansas, Nebraska, and eastern Colorado, because of excessive rains. Accompanied by Dr. E. D. Ball, he inspected the experiments at the Hays Branch Station and the Colby Substation. The 60-mile trip by auto from Colby, Kans., to Trenton, Nebr., to connect with the Burlington train for Akron, Colo., was particularly difficult because of heavy downpours and yellow clay mud. From Akron the party went by train to North Platte, Nebr., where they were met by Dean Burnett and W. W. Burr, of the Nebraska Agricultural Experiment Station. With the latter they drove on July 13 from North Platte to Mitchell, where they visited the Scottsbluff Experiment Farm. Following a heavy rain Saturday afternoon at the latter place, the water was 10 inches deep in the roads. Reports by telephone indicated a rainfall of 2 1/2 inches 10 miles east, with wind and hail. Crops looked well in the vicinity of Mitchell. At North Platte they also were generally satisfactory, although the wheat was so rank that it had lodged and failed to fill.

A. C. Dillman, agronomist in charge of flax investigations, spent July 3 with county agent Boardman at Aberdeen, S. Dak., inspecting three fields of flax-wheat mixture in Brown County. A field of 60 acres of flax and durum wheat near Groton looked particularly good and probably will yield about 15 bushels of the mixture, about 50 per cent of each crop. In all fields of the mixed crop the flax was too thin, probably because of too deep seeding.

Crops in the vicinity of Aberdeen are in fair condition. An increased acreage of flax was noted in Brown County, and from Watertown to Reville. Frequent rains and cool weather during the latter half of June have benefited flax and in general the crop looks very satisfactory. Mr. Dillman expected to visit the experimental plats at Redfield and other points in South Dakota before returning to his summer headquarters at Mandan, N. Dak.

Dr. H. B. Humphrey wrote from South Dakota on July 6 that in the vicinity of Redfield, Doland, and other points, where approximately 40 per cent of the wheat acreage is sown to Marquis, a considerable infection of stem rust had appeared. The remaining 60 per cent of the wheat acreage is of durum varieties, which were all free from stem rust but showed a slight infection of scab. The only field of Kota that was seen was free from rust. The excessive rainfall in the eastern counties of South Dakota, together with high temperatures, has favored the rapid and widespread development of stem rust in the varieties of wheat susceptible to rust.

At Mandan and Fargo, N. Dak., Doctor Humphrey and W. E. Brentzel inspected the agronomic and pathologic experiments with flax. In the uniform rust nurseries at Fargo only a trace of stem rust was found on wheat and none at all on oats. Wheat throughout the Mandan section was seriously affected by drought.

Doctor Humphrey expected to go to St. Paul, Minn., Ames, Ia., Madison, Wis., Urbana and Bloomington, Ill., and La Fayette, Ind., before returning to Washington about July 20.

Dr. A. G. Johnson and Dr. W. H. Tisdale returned Saturday evening, July 14, from an inspection of the cereal disease experiments at Ithaca.

On July 19 Doctor Johnson and H. H. McKinney left for North Carolina to inspect the experimental plats of the take-all disease of wheat, conducted in cooperation with the North Carolina Agricultural Experiment Station at Lincónton. Doctor Johnson returned to Washington Saturday morning, July 21, while Mr. McKinney stopped off at Norfolk, Va., to confer with Ray L. Davis, of the Virginia Truck Experiment Farm, concerning a joint manuscript on certain phases of the take-all disease of wheat based on studies conducted at Madison, Wis.

Dr. F. E. Kempton, pathologist in charge of barberry eradication and John W. Baringer, Noel F. Thompson and Dr. W. W. Robbins recently inspected the large area of escaped barberries near Holland, Lucas County, Ohio, to make observations on the effectiveness of sodium arsenite in killing barberry bushes. In this locality scouts are applying sodium arsenite to escaped bushes in areas that are not accessible to cattle; in pastures and woodlots where farm animals are at large, salt is being used. At Risingsun, Wood County, notes were made on bushes that had been treated with kerosene April 12 of the present year. Indications are that an application of 2 quarts of kerosene per bush in the spring is not wholly effective. Observations also were made on hedges at Gypsum, Ottawa County, treated with kerosene.

It is believed that sodium arsenite is thoroughly effective when carefully applied. Doctor Kempton reports that he found no rust on wheat from Sidney to Toledo, and only a few pustules of rust on wheat in the western part of the State. Practically all of the wheat had been cut, except in the northern part of the State, where a little spring wheat is grown.

Edward D. Keenler, of Evansville, Ind., was appointed field assistant July 12 to assist in the leaf-rust investigations conducted in cooperation with the Purdue University Agricultural Experiment Station at La Fayette.

H. H. McKinney, pathologist in the cereal disease investigations conducted at Madison, Wis., in cooperation with the Wisconsin Agricultural Experiment Station, was in Washington during the week of July 15 for conference regarding special research.

Merritt N. Pope, agronomist in barley investigations, and W. J. Sando, agronomist in eastern wheat investigations left Washington July 14 to study the wheat and barley nurseries conducted in cooperation with the New York State (Cornell) Agricultural Experiment Station at Ithaca, N. Y. They returned to Washington Saturday morning, July 21.

Dr. E. C. Stakman, agent in the cereal disease investigations conducted in cooperation with the Minnesota Agricultural Experiment Station, left St. Paul, Minn., Saturday, July 14 to sail from San Francisco a week later on the S. S. Tahiti for Australia. He has been invited by the Research Council of Australia to attend the meetings of the Pan-Pacific Science Congress to be held in Sydney and Melbourne between August 13 and September 3. The expenses of the trip will be borne for the most part by the Australian Research Council.

T. E. Stanton, agronomist in charge of oat investigations, on July 7 inspected the experimental plots of oats at the Ohio College of Agriculture, Columbus, Ohio, although careful observation was not possible because heavy rains had caused much lodging. He also visited agricultural experiment stations at Urbana, Ill., and La Fayette, Ind., July 9 and 10, respectively. Mr. Stanton noted that much of the wheat along the railroad through Ohio had become over-ripe because wet weather delayed harvesting. Corn appeared backward and the stand in most fields was irregular. The wheat crop in Indiana appeared satisfactory and oats and corn looked better than in Ohio. In Illinois wheat looked very good and corn was in excellent condition. Early oats were about 50 per cent ripe.

Kanota oats are attracting considerable attention at Urbana, Ill., and La Fayette, Ind.

Mr. Stanton arrived at Ames, Ia., July 11 and found crop conditions much the same as in Illinois and Indiana. He reports winter wheat generally fair to good and oats apparently shorter strawed than they have been for years. Early oats will make a good yield but midseason and late oats have been injured considerably by the hot weather. Corn was well advanced and looks promising.

The early varieties and strains of oats in plats were about ready for harvest, but most of the oats in the nursery were still rather green. The nursery in general was in poor condition, as considerable lodging had occurred.

MANUSCRIPTS AND PUBLICATIONS

Galley proof of Department Bulletin 1173, entitled "Experiments in Wheat Production on the Dry Lands of the Western United States," by D. E. Stephens, M. A. Mc Call and A. F. Bracken, was read July 13.

Page proof of article entitled "A Statistical Study of the Comparative Morphology of Biologic Forms of Puccinia graminis," by M. N. Levine, for publication in the Journal of Agricultural Research, was read July 11.

Page proof of Department Circular 250, entitled "Kota wheat," by J. Allen Clark and L. R. Waldron, was read July 13.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs) (No report)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor) (No report)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca
(H. H. Love) (No report)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (No report)

Agricultural Experiment Station, Baton Rouge (H. Stoneberg) (No report)

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (No report)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (No report)

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins) (No report)

Iowa State College, Ames (Barberry Eradication, J. H. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (No report)

Post Office Building, Urbana (Barberry Eradication, G. C. Curran)
(July 5) From June 27 to 30 all new field men who had been appointed for work in Illinois attended a 4-day school for instruction in plant pathology and other subjects. Special emphasis was put on cereal rusts and other diseases of grains and field crops. O. A. Plunkett of the department of botany, University of Illinois, had charge of the instruction in plant pathology. G. H. Dungan and S. S. Carney, of the crop production department, talked on agronomic problems and gave the men advice on the control of weeds. W. P. Flint, chief entomologist of the Illinois Natural History Survey, lectured on entomological problems. One afternoon was spent on a field trip on which the men were shown specimens of the grasses, grains, and diseases they had been studying.

Barberries have rusted all over northern Illinois this year. The rust from barberries was spreading to grains and grasses during the first part of June. At that time no infection could be found anywhere on grains and grasses away from barberries in northern Illinois. Rusted barberries were found near Pontiac last year, which was the southern limit of barberry infection. This year infected bushes were located by J. B. Hawkes at Pana, about 100 miles south of Pontiac and about 50 miles north of St. Louis. Stem rust infection on grains is being found in spots throughout the State and there is reason to believe that the rust may be overwintering in some localities.

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. W. Hoffer) (No report)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (No report)

College of Agriculture, Purdue University, La Fayette (Barberry Eradication, K. E. Deeson) (June report) Two teams were employed in central Indiana during the early part of June, one on original survey and the other on resurvey. A total of 750 bushes was located and salt applied wherever possible.

A school for all field assistants was held at La Fayette on June 21 and 22. At the close of the school, 10 additional men began field work and on July 2, 15 more reported for duty.

Very little infection was found on grain until late in June. At this time localized areas of infection were noted. In many instances, these included only a few square rods and in other cases, several acres in extent.

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, John W. Baringer) (No report)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) (No report)

WISCONSIN

Agricultural Experiment Station, Madison (J. G. Dickson) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, William W. Walker) (No report)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (June report) During the month of June the

survey of the city of Minneapolis was completed. This completes the survey of Hennepin County, making a total of 73 counties surveyed in the farm-to-farm survey for the entire campaign. A total of 146 bushes were found on 23 properties. On June 21 four teams working under State funds were assigned to Carlton, Chicago, Isanti and Pine counties. Probably very few barberries will be found in this area because these counties comprise what is called the cut-over country and have been settled in recent years.

The Federal scouts will concentrate their activities on resurvey, and sprouting bushes will be chemically treated in all cases except where there is danger of poisoning live stock.

Close observations have been made on the spread of rust from barberry bushes and at least six locations have been studied where it is quite evident that barberries were solely responsible for the infection. One of these areas of infection had originated from a group of barberry bushes which were missed in the original farm-to-farm survey. This year an attempt will be made to show that barberry plantings are responsible for the infection wherever stem rust appears to be heavier than the general epidemic.

The organization of the field forces was completed before the men reported for duty on July 2. There are 14 teams of two men each, in the farm-to-farm survey, and three foot scouts in St. Paul.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (John B. Sieglinger) (July 16)
July to date has been hot and dry. Thrashing is well under way over the county and the yields seem to average around 10 bushels with some yields of 15 bushels per acre reported. Prices reported are about 78 cents per bushel. Wheat is testing 60 pounds and better.

The sorghums in the July 1 date-of-seeding plats emerged to good stands on July 5 and are growing well considering the hot dry weather. To-day, July 16, a small plat each of Feterita, Dwarf feterita, Early White milo, and Sudan grass was sown to obtain data on these varieties sown this late in the season.

All the sorghums and broomcorn on the Cereal Project, with the exception of those sown July 1 and the plats seeded to-day, have been thinned to comparable stands. The plats were trimmed and the roads disked last week, which improves the appearance of the project; most of the plats have been hoed.

Starting July 5, the writer accompanied E. F. Chilcott to Garden City, Kans., returning by way of Spearman, Tex. Row crops are backward for this time of the year.

Maximum temperature to date, 100° on July 12; minimum, 66° on July 1. Precipitation 0.11 inch on July 12 and 0.17 inch on the 13th, a total of 0.28 inch for the month to date.

KANSAS

Agricultural Experiment Station, Manhattan (John H. Parker) (July 17) J. Allen Clark and Merritt M. Iope of the Washington office visited the station on June 21 to 23. J. H. Parker accompanied them to Hays and Colby to inspect and take notes on the winter wheat and barley experiments. Notes were obtained on habit of growth, earliness, and probable value of an extensive collection of barleys comprising 724 short rows grown at both these stations. Many of the late strains were discarded. A large number of strains will be sown in short rows next year, and a smaller number of the most promising types will be grown in replicated row rows.

E. G. Schafer of Pullman, Wash., was a station visitor on June 23.

Drs. C. R. and E. D. Ball visited the station on July 8.

L. E. Call and Director F. D. Farrell spent the week of July 8 in Missouri and Illinois conferring with the experiment station officials and visiting the outlying soils and crops experimental fields. The last legislature made an annual appropriation of \$6,000 for similar work in south-eastern Kansas. L. K. Landon has been appointed to have immediate charge of the field work which will be begun this fall. It is expected that two or three of these fields will be located this month. The testing and improvement of varieties of soft wheat will be made a special feature of the work on one of these fields.

Weather at Manhattan during June and July.

Highest temperature, 99° on the 25th; lowest temperature, 47° on the 29th. Measurable precipitation fell on 11 days, totaling 4.94 inches. Number of clear days, 6; number of cloudy days, 2; number of partly cloudy days, 22. The frequent rains and storms caused almost complete lodging in the winter wheat nursery and some lodging of oats and barley nurseries. They seriously interfered with harvesting in the nursery, which was not completed until the second week in July. Recent rains have prevented getting a start at nursery threshing, which will not begin until July 18.

During first half of July, measurable precipitation fell on five days, totaling 6.88 inches; highest temperature, 96° on July 11.

Weather and Crop Conditions in Kansas during June.

First Week: Heavy rains totaling 1 to 5 inches. Temperatures were above normal the latter part of the week. Heavy rains lodged much of the wheat.

Second Week: Heavy and almost continuous wet weather continued. Temperatures were below normal. Thousands of acres of wheat were flooded in the Arkansas Valley south and east of Wichita.

Third Week: Warm weather and sunshine, the latter part of the week made fine crop growing weather. Heavy rains fell in the central and southeastern part of the State, totaling 1 to 2 inches. Wheat suffered further damage from wet weather and chinch bugs.

Fourth Week: Warm weather was general; afternoon temperatures of 95 to 100 degrees were common. Wheat ripened very rapidly in the eastern two-thirds of the State. Some of it was shrivelled from the results of the sudden change from cool and wet to hot and dry weather.

Weather and Crop Conditions during first half of July.

First Week: Cool weather for the season was general; rains were frequent. Great damage was done by severe hail storms, in several localities.

Second Week: Especially favorable weather for crop growth and harvest prevailed; afternoon temperatures generally ranged between 90 and 95 degrees.

According to a recent report issued by E. C. Paxton, Federal agricultural statistician for Kansas, 80,000 acres were planted to broomcorn in this State in 1923, a tremendous increase over the 16,000 acres planted in 1922. Large increases were also made in the acreages planted to this crop in other States.

The Kansas corn acreage of 5,863,000 is 15 per cent greater than that of last year. The area sown to barley in Kansas in 1923 was 1,035,000 acres. Grain sorghums were planted this year on 1,455,000 acres, or 40 per cent greater than that of last year and one of the record acreages for the state. In addition to the grain sorghums, there are 904,000 acres of sorgo and other sorghums planted for forage.

Hays Branch Experiment Station, Hays (A. F. Swanson) (July 17)

The weather since July 1 and following the severe hail storm of June 23 has been favorable for row crops. The sorghums have made good recovery from the effects of the hail but were set back about two weeks in growth. The corn is showing permanent injury and at best can make only a partial crop. The rainfall for the first 15 days of July at Hays has been less than 0.25 inch. However, throughout many portions of northwestern Kansas local showers have been frequent and quite general. In many localities more than 2 inches of rain has fallen during the last fifteen days.

Dr. E. D. Ball, Director of Scientific Research, and Dr. C. R. Ball, Cerealist of the Office of Cereal Investigations, were station visitors July 10. During the morning the visitors inspected the station and experimental work. They left in the afternoon in company with Supt. Aicher, Mr. Hallsted, and the writer for the Colby Branch Experiment Station. The trip was made by auto and was of considerable interest from an agronomic standpoint.

The wheat crop varied in different localities between Hays and Colby, depending to a large extent upon the local showers which fell last fall. Where the wheat had an early start in the fall the prospects were good. In areas where late germination occurred and further injury followed from soil blowing the wheat was poor and woody. In many cases the fields had been abandoned or had been seeded to either barley or corn. As a result there is a much larger acreage of barley and corn than usual in western Kansas. The prospects for a corn crop have never been better in this particular section.

The outstanding complaint this year among the wheat growers is the damage to the wheat from stem rust. The early wheat escaped the rust to some extent and will make quite satisfactory yields but all of the late fields of wheat are heavily infected. The loss from rust will be heavy. The harvest this year is from ten days to two weeks later than normal.

The farmers are also complaining of the low price of wheat. The general tendency is for a reduction in acreage of wheat to be seeded this fall in these sections where diversified farming is already practiced to some extent. In the sections where wheat is grown almost exclusively as around Colby there will probably not be much reduction in acreage. Fifty miles west of Hays there is a heavy infestation of Hessian fly. Grasshoppers are more numerous this year than usual.

The writer assisted in harvesting the barley nursery at the Colby station, where 724 varieties and strains were grown. A duplicate nursery at Hays was destroyed by hail.

Harvest is now well under way throughout most of western Kansas. There seems to be plenty of labor to take care of the wheat crop.

From Hays to the western end of the State, plenty of moisture is available at present for row crops, the temperature is moderate, and harvest is well under way with good crops of oats and barley in the shock. The acreage of corn is larger than usual, with most favorable prospect for a good crop. The condition of the wheat varies from abandoned fields to prospective acre yields of 20 to 25 bushels. The high-yielding fields are those in which the wheat made an early start in the fall and was far enough along to escape the rust. The late fields of wheat are suffering from a heavy epidemic of stem rust which will result in a greatly reduced yield. Pastures are in excellent condition.

COLORADO

Akron Field Station, Akron (F. A. Coffman) (No report)

Agricultural College, Ft. Collins (Barberry Eradication, E. A. Lungren)

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication) (A. F. Thiel) (No report)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, Ralph U. Cotter) (No report)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, Lynn D. Hutton) (No report)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, Geo. E. Mayoue) (No report)

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.) (July 17) The first half of July has been warm with just enough rain to keep the crops growing fairly well.

The early maturing crops, which suffered from drought early in June, have not recovered very well, so that the later varieties of grain are likely to give the best yields.

A. C. Dillman returned July 11.

Maximum temperature for the first half of July, 97 degrees on July 3; minimum 55 degrees, July 3; precipitation 1.02 inches.

Dickinson Substation, Dickinson (Ralph W. Smith) (July 16)

Warm weather prevailed during the first half of July and several good showers occurred. The rainfall for June was 4.55 inches, which is about 1.50 inches above normal. Most of this rain fell during the latter half of the month, greatly benefiting late varieties and late-sown crops. The rainfall in July to date is 1.70 inches. The maximum temperature for the month so far is 91 degrees.

Winter rye and early varieties of oats and barley will be ripe about July 15. Winter wheat is beginning to ripen. Early varieties are very short due to dry weather early in the season. All varieties are somewhat shorter than last year, but fairly good yields are now indicated.

A light infection of stem rust is present on the common wheat varieties and more of leaf rust, the latter varying from 10 to 40 per cent.

A number of crosses between spring wheat varieties were made this year with a view to combining rust resistance with good yield and quality. Out of several crosses made last year between Dakota winter rye and Kanred winter wheat, only one plant proved to be a wheat-rye hybrid. Twenty-seven heads produced by this plant have been crossed back with winter wheat.

Corn varieties in the field and nursery are in excellent condition. The selfing of promising strains has begun.

The flax crop at the Substation and in the vicinity is quite promising.

The Substation was visited recently by John M. Stephens of the Office of Dry-Land Agriculture and H. L. Westover of the Office of Forage-Crop Investigations.

J. Allen Clark visited the Substation from July 13 to 15.

MONTANA

Judith Basin Substation, Meccasin (Ralph W. May) (July 13) Precipitation during June was 5.30 inches, as compared to 3.10 inches, the average June precipitation for the past 25 years. The precipitation during the first thirteen days of July was 1.03 inches, while the average for the whole month is 1.92 inches.

As a result of the abundant precipitation, crops are looking unusually good. Local hail storms occurred during the past week, some causing almost total losses. One hail storm struck the experiment farm on July 8. The damage for the most part did not exceed 3 to 5 per cent, although on a few plots it was as high as 10 to 30 per cent. It is reported that the same storm on neighboring farms injured the crops to the extent of 50 per cent.

The annual experiment farm picnic is scheduled for July 24. Most of the work at the present time is directed toward getting the plats in shape for the picnic. Practically all of the grain has headed.

Maximum temperature during the first half of July was 82 on the 11th, while the minimum temperature was 49 on the 3d and 5th.

State College of Agriculture, Bozeman (Barberry Eradication, W. N. Christopher) (No report)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wisbe) (No report)

OREGON

Sherman County Branch Station, More (D. E. Stephens) (No report)

CALIFORNIA

Biggs Rice Field Station, Biggs, (J. W. Jones) (July 14)

The weather during the past two weeks has been favorable for rice growth. However, the rice is shorter than is normal at this time of the year.

We have finished pulling water grass for the second time in the varietal experiments, and have removed the cut-tails from the various plats on which the water has been held continuously since the rice was sown. The rice looks much better on plats continuously submerged than on those that were irrigated up before submerging. Continuous submergence is also much more effective in the control of water grasses.

The area sown to rice in California this year is estimated at 105,500 acres compared to 140,000 acres in 1922.

University Farm, Davis (V. H. Florell) (No report)

Agricultural Experiment Station, Berkeley (Fred N. Briggs) (No report)

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U.S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15

July 31, 1923.

No. 18

Personnel (July 31 - 31) and Project Issue.

PERSONNEL ITEMS

Dr. C. R. Ball writes while en route from Billings to Moccasin, Mont., July 17 that he and Dr. E. D. Ball had just visited the field stations at Ardmore, S. Dak., and Sheridan, Mont., where they found the crops and the experiments in excellent condition. A marked increase in the barley acreage was noted in northwestern Kansas and western Nebraska, as also an increase in the corn acreage in the northern Great Plains. From Moccasin Drs. C. R. and E. D. Ball planned to go to Huntley, Mont., and to Mandan and Dickinson, N. Dak., returning from the latter point to Bozeman, Mont., to attend the conference of western agronomists. From Ardmore, S. Dak., to Mandan, N. Dak., they were accompanied by J. M. Stephens, agriculturist in charge of the field stations of the Office of Dry Land Agriculture in the northern Great Plains.

The appointment of John L. Federer, unskilled laborer, assisting J. C. Brinsmade, Jr., in the plat experiments with flax at the Northern Great Plains Field Station, Mandan, N. Dak., was terminated June 30.

Dr. H. V. Harlan writes from Ganderbal, Kashmir, under date of June 18, that he is getting considerable plant material and has succeeded in making some favorable contacts with agricultural workers who will furnish additional specimens in the future.

Dr. H. B. Humphrey returned to Washington July 20, after an absence of 60 days in the field. His itinerary included 26 official stops and several field inspection trips. He first visited Knoxville, Tenn., where he found the Australian take-all disease of wheat on the University Farm. Later, he and Dr. E. B. Mains observed the recurrence of the downy mildew of wheat in Obion County, Tenn. From Tennessee Doctor Humphrey went to Granite City, Ill., where he attended the flag-smut conference. He then visited Manhattan, Kans., Tucson, Ariz., and several points in California, Oregon, Washington, and Idaho. On the return journey, he stopped at Mandan and Fargo, N. Dak., Redfield and Deland, S. Dak., St. Paul, Minn., and at several points in Wisconsin, Illinois, and Indiana.

In the Imperial Valley, California, Doctor Humphrey was joined by W. W. Mackie. Near Holtville, where a large acreage is devoted to wheat, they saw a field of Hard Federation wheat the yield of which was 73 bushels per acre. Wheat and barley fields were inspected for rusts, smuts, and other diseases at Escondido, Hanford, the Tulare Lake bottoms, Stockton, and Davis. At Davis and elsewhere in California, Ophiobolus graminis was observed on wheat, causing the "white-head" phase of the take-all disease. In the agronomic and rust nurseries stripe rust was abundant on certain varieties of wheat. This disease also was epidemic on several varieties in the plats at the Sherman County Branch Station, Moro, Oreg. Here also the rust was found fairly abundant on one variety of barley.

All attempts to find rust-infected barberries in western Washington failed. At Pullman, Wash., and Moscow, Idaho, the bunt-resistant varietal experiments and stripe-rust studies were inspected and the work found in a very satisfactory state of progress.

Inspection of cereal nurseries and several commercial wheat fields in the Dakotas and Minnesota in early July resulted in observations of stem-rust infection varying from a trace to 30 per cent. At Ames, Iowa, Doctor Humphrey inspected the crown-rust experiments and, with Doctor Melhus and S. M. Dietz, made observations on several oat fields between Ames and Cedar Rapids. At Madison, Wis., the various laboratory and field studies on wheat scab, barley stripe, and other cereal diseases were inspected and observations were made at Marshall and Black Earth, Wis., on results of experiments with chemicals in eradication of barberries.

Following his stop at Madison Doctor Humphrey proceeded to Urbana, Ill., where he was joined by J. R. Holbert and C. S. Reddy. Here they visited the University Farm and inspected the cooperative studies on corn root rots. The following day they visited the farms of the Turk Bros. Seed Co., where extensive experiments on corn diseases were inspected. His last official stop was at La Fayette, Ind., where the corn root-rot studies of Dr. G. N. Hoffer and associates were observed and results of the season's work on leaf rusts were considered with Prof. H. S. Jackson and Doctor Mains.

Dr. G. E. Leighty returned to Washington July 20 after an absence of 15 days during which he traveled by automobile through Maryland, Pennsylvania, and New York. He visited State College, Pa., and inspected the cereal experimental plats. Wheat varieties on the experiment farm were considerably injured this year by the Hessian fly which had come out later than the usual date. About 10 days were spent in New York, principally at Ithaca, and one day with the pathologists who traveled from Geneva to Niagara Falls and into Canada by automobile in connection with their annual summer meeting. A field of wheat infected with take-all was examined near, Lyons, N. Y., in which the disease was rather widespread. The yield apparently was not reduced materially thereby, as the field probably would average around 50 bushels to the acre. One day was spent at Butavia, where the Hackox-Rumsey Company, Inc., is increasing strains of cereals developed by the plant breeding department of the Cornell Agricultural Experiment Station in

cooperation with this Office. Several hundred acres of Forward wheat, the result of a selection made at Ithaca, were being grown by this company. This variety is beardless with smooth, white chaff and red kernels. It has yielded more than any other variety in the tests at Ithaca and gave promise of high yields at Batavia. Most of the wheat in New York State is whitekerneled and this red-kernelled variety must compete with the white wheat for a place on the farms. Several of the new strains of oats and two strains of barley were also being grown. Extreme care is taken by this company to keep the varieties pure, not more than half of one per cent mixture being found in any field that was intended for seed. In many cases the impurity amounted to only a trace.

The most important pest of wheat observed in New York and Pennsylvania this year was the sawfly. Infestations as high as 80 per cent were noted. The larva of this insect burrows in the hollow of the wheat culm and then descends near the ground. After having girdled the culm on the inside it descends slightly and forms a plug, below which it pupates, remaining until the following spring. The culm may bend or break off at the point of girdling, causing loss of grain thereby. This insect has apparently done more damage this year than in any previous year, being widespread over the wheat section of New York and over much of Pennsylvania. It was found as far south as Parkton, Md.

Ralph C. Thomas was appointed field assistant, effective August 1, to assist in the investigations of methods of eradicating barberries (Barberis canadensis) conducted in cooperation with the Virginia Agricultural Experiment Station at Blacksburg, Va.

Hiram F. Wood and Walter I. Wood have been appointed unskilled laborers, effective July 10, in the cooperative cereal investigations in Oregon, to take the places left vacant by the resignation of R. B. Hoskinson and George A. Mitchell.

The following additional appointments have been made in the barberry eradication campaign since July 1:

Illinois: Charles P. Phelps; Iowa: Douglas C. Beeler, Lester E. Erwin, Alva C. Hill, Lyle D. Leach, Walter P. Raleigh, Howard W. Sechrist, Steve J. Timborious; Michigan: James L. Kidman, Otto E. Meyer; Nebraska: Ireland C. Albertson, Harvey B. Harris, David E. Lindstrom; North Dakota: Theodore C. Meldahl, Albert S. Severson, Bert Wick; Ohio: Philip O. Wagner; South Dakota: Earl Gannon, David V. Kopland, Courtney W. Larson, Arthur E. Mortenson; Wisconsin: Samuel Lepkovsky.

The following appointments have been revoked: Illinois: Siegfried P. Harter; Iowa: Charles O. Peak; Minnesota: Gerald A. Vacha; North Dakota: Oren H. Vaaler; Ohio: Cyrus B. Wright; South Dakota: Leonard A. Thune.



VISITORS

Edward C. Parker, of Billings, Mont., brother of John H. Parker, ~~was~~ an Office visitor July 31.

Bert Ball, Director of Plans of the Northwestern Crop Improvement Association, of Minneapolis, called at the Office July 31.

MANUSCRIPTS AND PUBLICATIONS.

Galley proof of Department Bulletin 1175, entitled "Grain Sorghum Experiments at the Woodward Field Station in Oklahoma," by John B. Siegländer, was read July 24.

Galley proof of article entitled "Resistance in Rye to Leaf Rust, Puccinia dispersa, by E. B. Mains and C. E. Leighty, for publication in the Journal of Agricultural Research, was read July 30.

Page proof of Department Bulletin 1172, entitled "Cereal Experiments at Chico, California," by Victor H. Florell, was read July 24.

The paper entitled "The Minimum Temperature of Germination of Seeds," by F. A. Coffman, was published in The Journal of the American Society of Agronomy, v. 15, no. 7, p. 257-270, July, 1923.

An article entitled "Intracellular Bodies in the Phloem Tissue of Certain Plants and Their Bearing on the Mosaic Problem," by S. P. Doolittle and H. H. Mc Kinney, was published in Phytopathology, v. 13, no. 7, p. 326-329, 1 pl. July, 1923. Literature cited, p. 329.

U. S. Dept. Agri. Circ. 273, entitled "Flag Smut of Wheat," by W. H. Tisdale, G. H. Dungan, and C. E. Leighty, was received from the Government Printing Office July 31, bearing publication date of June, 1923.

PROJECT REPORTS.RUST INVESTIGATIONS.

(Dr. H. B. Humphrey, Pathologist in Charge).

Report of Progress in Barberry Eradication for the Fiscal Year

Ending June 30, 1923.

Dr. F. E. Kempton, Pathologist in Charge.

The campaign for the eradication of the common barberry to control the black stem rust of wheat was begun in the spring of 1918 and is now in its sixth year. The eradication area comprises 13 of the north-central wheat-growing States, namely, Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin, and Wyoming. The campaign is conducted in cooperation with the State agricultural college in each of the States, with the State department of agriculture in most of them, and with the Conference for the Prevention of Grain Rust.

A preliminary campaign of education and survey was begun about April 1, 1918 under the Emergency Appropriation for Stimulating Agriculture. An appropriation of \$150,000 for barberry eradication for the fiscal year ending June 30, 1919 was approved October 1, 1918. Appropriations for the succeeding fiscal years were as follows: 1920, \$150,000; 1921, \$147,000; 1922, \$147,200; 1923, \$350,000; and 1924, \$425,000, \$125,000 of which is to be met by funds from the States and other cooperating agencies.

Results from July 1, 1922 to June 30, 1923.

During the fiscal year ending June 30, 1923 the farm-to-farm survey has been continued in new territory, and a resurvey has been made of the cities and villages in this territory. A resurvey for sprouting bushes and seedlings also has been made of properties on which barberry bushes had been found and removed previously in the farm-to-farm survey.

An area equivalent to 200 counties was completed in the farm-to-farm survey during the year. Of these, 15 counties in Minnesota were surveyed on funds furnished by that State. In the survey, 223,633 bushes were located on 6,461 properties. Of these bushes, 140,905 were escaped from cultivation on 906 farms. In all, 740,855 bushes were removed from 6,799 properties. In the resurvey 66,670 sprouting bushes and 9,138 seedlings were destroyed.

Education and Publicity.

A vigorous effort has been made to inform the public of the relation between the common barberry and black stem rust. The value of this phase of the campaign is shown by the increased cooperation of farmers, business men, and local and State organizations.

The following publications were distributed in 1922:

<u>Number.</u>	<u>Title.</u>	<u>Number of Copies.</u>
F. B. 1058 rev.	Destroy the Common Barberry	112,700
Dept. Cir. 188	Progress of Barberry Eradication	21,910
Yearbook Sep. 796	The Black Stem Rust and the Common Barberry	11,505
Dept. Cir. 268	Kill the Common Barberry With Chemicals	75,108
Dept. Cir. 269	Barberry Eradication Prevents Black Stem Rust in Western Europe	72,355

The Conference for the Prevention of Grain Rust has aided materially in this phase of the campaign. Under its direction, 25 panel demonstrations were shown at 144 fairs; 830,000 publications and 264,486 posters were distributed; 1,800 articles for newspapers and magazines were prepared and distributed; and a two-reel film was shown 125 times.

Investigations.

Investigations and research indicate that common rock salt and dilute sodium arsenite when carefully applied are both effective and economical for destroying common barberry bushes. Eradication by digging is not effective in stony or heavy ground. Further research is in progress. Mature bushes, uncut and cut off at the ground, and young bushes and seedlings are being treated at different seasons of the year with various salts, oils, and chemicals that give off destructive gases. Studies are being made of the quantities necessary to apply, the parts of the bush to which the treatment can be applied most effectively, and the best time of application of each of the various chemicals. Studies are under way to ascertain the quantity of reserve food present in the various parts of the barberry plant at different periods of the year in order to study the relation of such supplies to killing.

Other studies on penetration of the various chemicals to different parts of the plants are in progress. Observations are being made also on the methods of distribution of barberry plants, soils upon which escaped bushes most often appear, sizes and ages of the bushes appearing in these areas, and the extent of the various areas of escaped bushes. Maps have been prepared of these areas of escaped bushes not only for study but to give information for finding and eradicating sprouting bushes and seedlings on future resurveys.

Extensive observations on the spread of stem rust were made during the past spring. An investigator was sent to Mexico to study rust conditions and to determine if possible whether the overwintering of spores in the South might be responsible for epidemics in the North. The progress of infections was followed from Texas to Canada, definite observations being made on dates on which rust first appeared on grains and grasses, and on dates of initial infection on common barberry. In cooperation with the War Department airplane flights were made in the study of the spread of stem rust to determine the presence of rust spores in the air during the growing season of wheat and the possibility of their spread by surface winds or upper air currents.

An investigator was sent to Europe to study stem-rust conditions in relation to the common barberry in the wheat-growing areas of western Europe. His observations showed clearly that the occurrence of stem rust was primarily dependent upon the presence of the common barberry. In countries from which the common barberry had been removed, rust losses were reduced to a minimum.

Results During Five Years, 1918 to 1923

Since the beginning of the campaign practically all cities and villages of the thirteen States within the quarantine area have been surveyed. In the original farm-to-farm survey, an area equivalent to 484 counties has been covered. This included 39 counties surveyed on funds furnished by States.

In all, 5,847,979 bushes have been located on 56,747 properties; of these 3,437,178 were escaped bushes on 3,340 farms. In the five years, 5,196,768 bushes have been destroyed on 53,165 properties and 38,178 seedlings on 445 properties.

Tables 1 and 2 show the survey results by States for the fiscal year July 1, 1922 to June 30, 1923.

Tables 3 and 4 show the survey results by States from April 1, 1918, to June 30, 1923.

Table 1. Data showing, by States, the number of properties on which barberry bushes and seedlings were found and removed in the Barberry Eradication Campaign from July 1, 1922, to June 30, 1923.

Period.	Number of properties on which bushes were found.										Number of properties on which seedlings were			
	In country					Total number of prop- erties cleared of bushes.					:seedlings were			
	cities and towns	Having escaped bushes	Total	Dug	Treated	Total	Found	Dug	Treated	Destroyed	Total	Treated	Destroyed	Total
Colorado	22	18	22	44	35	13	38	0	0	0	0	0	0	0
Illinois	648	129	297	945	1,036	14	1,050	2	2	0	0	0	0	2
Indiana	152	65	251	403	389	16	405	4	3	1	1	1	1	4
Iowa	124	170	707	831	792	26	818	13	12	1	1	1	1	13
Michigan	330	141	495	825	890	0	890	0	0	0	0	0	0	0
Minnesota	232	166	637	869	871	10	881	156	155	1	1	1	1	156
Montana	6	1	6	12	4	0	4	0	0	0	0	0	0	0
Nebraska	25	23	196	231	270	4	274	0	0	0	0	0	0	0
N. Dakota	19	0	84	103	98	5	103	0	0	0	0	0	0	0
Ohio	695	37	438	1,133	1,241	17	1,258	2	1	1	1	1	1	2
S. Dakota	47	24	152	199	142	33	175	20	15	5	5	5	5	20
Wisconsin	377	132	439	816	756	110	866	14	1	5	5	5	5	6
Wyoming	0	0	0	0	27	0	27	0	0	0	0	0	0	0
Total	2,737	906	3,724	6,461	6,551	248	6,799	211	189	14	14	14	14	203

Table 2. Data showing, by States, the number of barberry bushes and seedlings found and removed in the barberry eradication campaign from July 1, 1922 to June 30, 1923.

Period	Number of bushes found			Number of bushes destroyed			Number of seedlings		
	In cities and towns	In country		Total	Dug	Treated	Total	Found	Dug
		Escaped	Total						
Colorado	344	977	1,067	1,411	1,293	203	1,496	0	0
Illinois	4,180	3,430	5,103	9,283	9,067	605	9,672	193	193
Indiana	667	3,945	8,195	8,862	11,134	104	11,238	135	125
Iowa	3,079	20,028	37,475	40,554	32,180	636	32,816	236	236
Michigan	5,083	77,517	83,749	93,832	100,368	0	100,368	0	0
Minnesota	2,924	24,325	34,709	37,633	37,750	155	37,905	11,172	11,162
Montana	87	41	264	351	15	0	15	0	0
Nebraska	642	2,081	5,040	5,682	5,618	106	5,724	0	0
North Dakota	103	0	1,845	1,953	1,875	78	1,953	0	0
Ohio	3,586	988	4,605	8,191	11,800	1,863	13,653	68	60
S. Dakota	953	4,226	8,859	9,812	7,149	3,317	10,466	2,766	2,167
Wisconsin	1,463	3,347	4,576	6,044	510,671	2,063	512,734	5,952	4
Seedlings	0	0	0	0	2,805	0	2,808	0	0
Total	25,141	140,905	200,492	223,633	731,725	9,130	740,855	20,522	13,895
									1,721
									15,616

Table 3. Data showing, by States, the number of properties on which barberry bushes and seedlings were found and removed in the barberry eradication campaign from April 1, 1918 to June 30, 1923.

Period	Number of properties on which bushes were found.			Total number of properties cleared of bushes.			Number of properties on which seedlings were		
	In cities and towns	In country	Total	Dug	Treated	Total	Found	Dug	Treated
Colorado	1,530	35	1,657	1,642	13	1,655	0	0	0
Illinois	8,415	476	9,515	9,156	14	9,170	2	2	2
Indiana	3,303	122	4,039	4,005	16	4,021	4	3	4
Iowa	6,808	378	8,545	8,498	26	8,524	13	12	15
Michigan	4,204	1,046	8,325	6,490	0	6,490	0	0	0
Minnesota	3,019	385	4,683	4,664	10	4,674	331	330	331
Montana	157	2	206	198	0	198	0	0	0
Nebraska	3,064	44	3,547	2,199	4	3,203	0	0	0
North Dakota	498	1	738	733	5	738	1	1	1
Ohio	5,223	102	6,222	5,691	18	5,709	2	1	2
South Dakota	430	90	878	745	33	778	86	81	86
Wisconsin	6,345	653	8,305	7,811	110	7,921	14	1	5
Wyoming	74	1	87	84	0	84	0	0	0
Total	43,070	3,340	56,747	52,916	249	53,165	453	431	445

Table 4. Data showing, by States, the number of barberry bushes and seedlings found and removed in the barberry eradication campaign from April 1, 1918 to June 30, 1923.

Period	Number of bushes found.			Number of bushes destroyed.			Number of seedlings.				
	In cities & towns	In country	Total	Total	Dug	Treated	Total	Found	Dug	Treated	Total
Colorado	19,541	2,426	21,967	24,033	23,827	203	24,030	0	0	0	0
Illinois	96,846	29,082	125,928	144,592	131,294	605	131,899	193	193	0	193
Indiana	76,115	8,154	84,269	97,277	96,256	104	96,360	135	125	10	135
Iowa	545,623	52,294	597,917	772,969	764,200	636	764,836	236	236	0	236
Michigan	44,443	154,477	198,920	265,108	221,090	0	221,090	0	0	0	0
Minnesota	591,725	77,851	669,576	779,418	779,226	155	779,381	19,272	19,162	10	19,172
Montana	6,659	42	6,701	9,028	8,636	0	8,636	0	0	0	0
Nebraska	71,940	5,222	77,162	89,473	88,512	106	88,718	0	0	0	0
N. Dakota	14,279	150	14,429	12,522	12,444	78	12,522	150	150	0	150
Ohio	400,817	20,762	421,579	231,175	213,050	1,873	214,923	68	8	60	68
S. Dakota	23,083	18,638	41,721	55,813	47,429	3,317	50,806	17,178	16,579	559	17,178
Wisconsin	278,300	3,068,069	3,346,369	3,355,430	2,790,428	2,063	2,792,551	5,952	4	1,012	1,016
Wyoming	3,946	1	3,947	4,140	3,968	0	3,968	0	0	0	0
Total	2,013,317	3,437,178	5,450,495	9,247,979	5,187,628	9,110	5,196,768	43,184	36,157	1,721	38,178

SEMIANNUAL REPORT OF PUBLICATIONS AND MANUSCRIPTS,

JANUARY 1, 1923, TO JUNE 30, 1923.

The following 32 papers, resulting from the work of the Office of Cereal Investigations, were published during the first half of the calendar year 1923, in the various series of Departmental publications, in the bulletin series of the cooperating State agricultural experiment stations, and in private journals. The seven marked with an asterisk were submitted during the period from January 1 to June 30, 1923.

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AGRONOMIC SUBJECTS

Corn.

Influence of Spacing on Productivity in Single-Ear and Prolific Types of Corn, by E. B. Brown and H. S. Garrison. U. S. Dept. Agr. Bul. 1157, 10 p., 6 fig. May 21, 1923.

*A New Method of Self-Pollinating Corn, by Merle T. Jenkins. In Jour. Hered., v. 14, no. 1, p. 41-44, fig. 17-18. April, 1923. (In cooperation with the Iowa Agricultural Experiment Station).

Wheat.

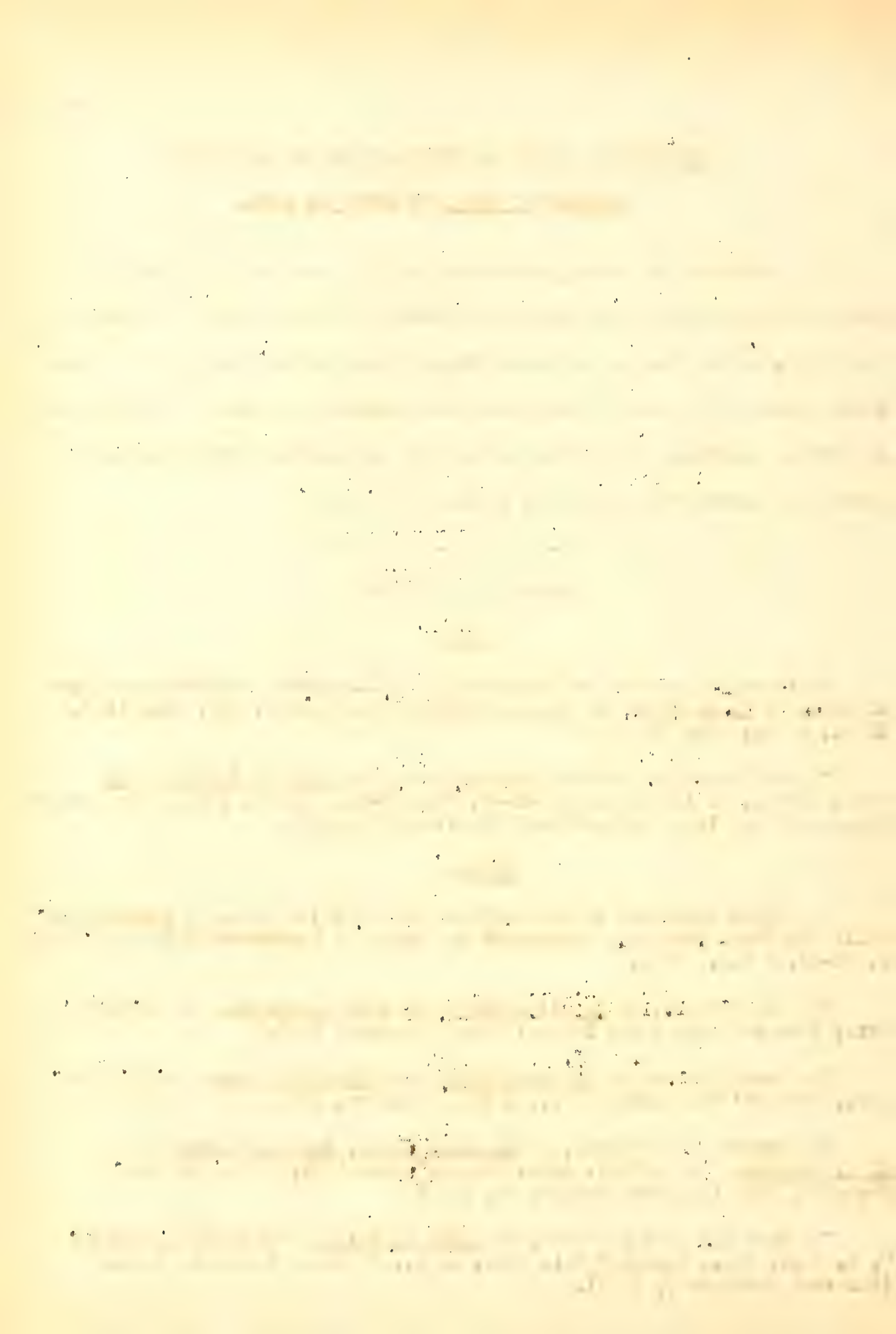
The Wheat Situation in the Northern Great Plains Area, by Carleton R. Ball. In Proc. 36th Ann. Conven. of the Assn. of Land-Grant Colleges, 1922, p. 85-92, 6 fig. 1923.

The Club Wheats, by J. Allen Clark and John H. Martin. U. S. Dept. Agr., Farmers' Bul. 1303, 17 p. 12 fig. January, 1923.

The Durum Wheats, by J. Allen Clark and John H. Martin. U. S. Dept. Agr., Farmers' Bul. 1304, 15 p., 5 fig. January, 1923.

The Common White Wheats, by J. Allen Clark, John H. Martin and C. E. Leighty. U. S. Dept. Agr., Farmers' Bul. 1301, 42 p., 20 fig. December, 1922 (Received January 26, 1923).

The Soft Red Winter Wheats, by Clyde E. Leighty and John H. Martin. U. S. Dept. Agr., Farmers' Bul. 1305, 53 p., 49 fig. December, 1922, (Received February 6, 1923).



Barley.

Water Content of Barley Kernels during Growth and Maturation, by Harry V. Harlan and Merritt N. Pope. In Jour. Agr. Research, v. 23, no. 5, p. 333-360, 15 fig. February 3, 1923. (In cooperation with the Idaho Agricultural Experiment Station).

Many-Noded Dwarf Barley, by Harry V. Harlan and Merritt N. Pope. In Jour. Hered., v. 13, no. 6, p. 269-273, fig. 12-15. June, 1922. (Date of Issue, February 15, 1923)

Rice.

Some New Varieties of Rice, by Charles E. Chambliss and J. Mitchell Jenkins. U. S. Dept. Agr. Bul. 1127, 18 p., 4 pl., 3 fig. January 12, 1923. (In cooperation with the Louisiana Agricultural Experiment Station).

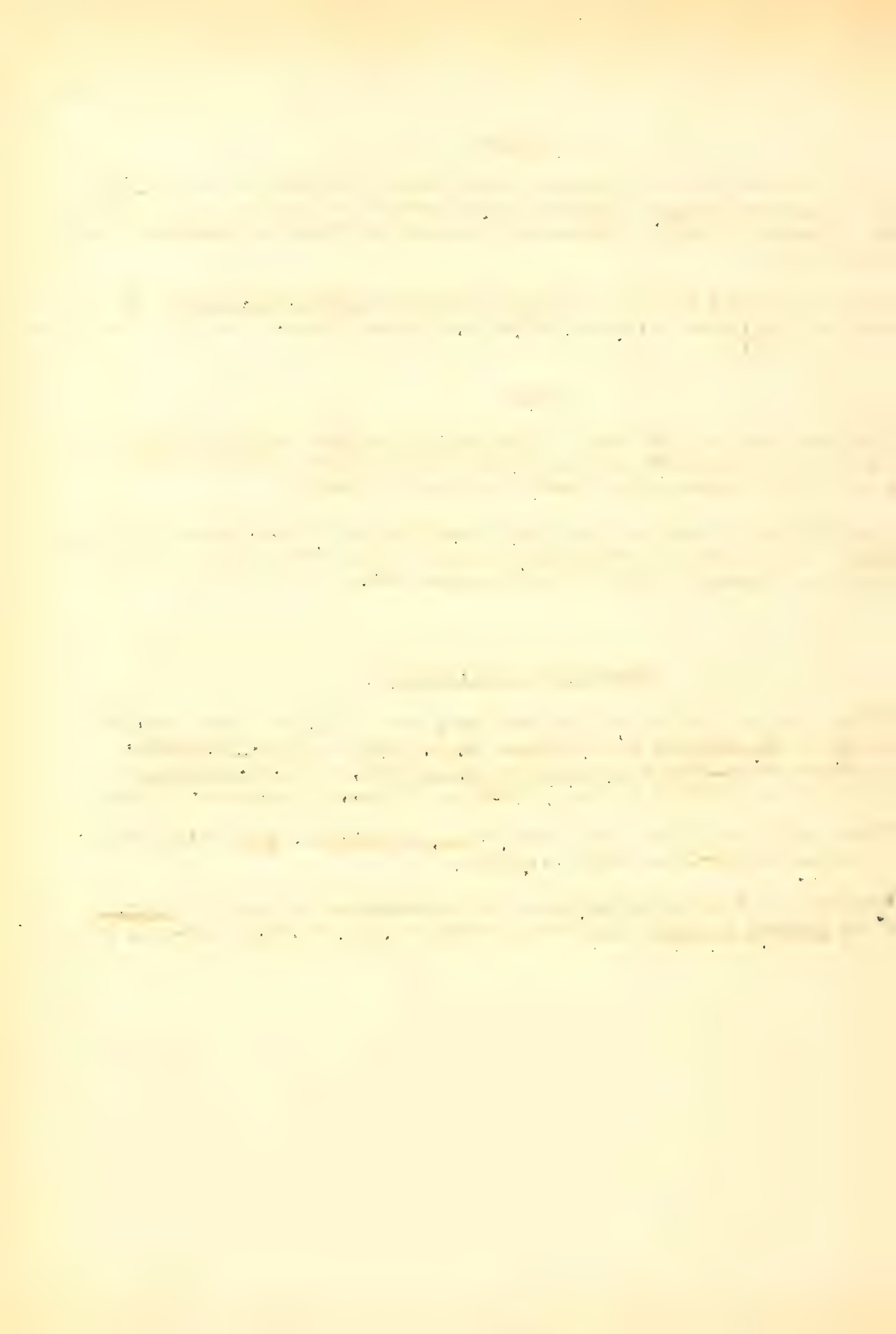
Rice Experiments at the Biggs Rice Field Station in California, by Jenkin W. Jones. U. S. Dept. Agr. Bul. 1155, 60 p., 15 fig. June, 1923. (In cooperation with the Sacramento Valley Grain Association).

General or Miscellaneous.

*Oats, Barley, Rye, Rice, Grain Sorghums, Seed Flax, and Buckwheat, by C. R. Ball, T. R. Stanton, H. V. Harlan, C. E. Leighty, C. E. Chambliss, A. C. Dillman, O. C. Stine, O. E. Baker, O. A. Juve, and W. J. Spillman. U. S. Dept. Agr., Yearbook 1922, p. 469-563, 64 fig., 1 headpiece. 1923.

*Flax and Wheat; a New Mixed Crop, by A. C. Dillman. In Dakota Farmer, v. 43, no. 5. p. 232-233. March 1, 1923.

*The Use and Value of Back-Crosses in Small-Grain Breeding, by Harry V. Harlan and Merritt N. Pope. In Jour. Hered., v. 13, no. 7, p. 319-322, 1 chart.



PATHOLOGIC SUBJECTS

Imperfect and Sac Fungi

Influence of Soil Temperature and Moisture on the Development of the Seedling-Blight of Wheat and Corn Caused by Gibberella saubinetii, by James G. Dickson. In Jour. Agr. Research, v. 23, no. 11, p. 837-870, 6 pl., 15 fig. March 17, 1923. (In cooperation with the Wisconsin Agricultural Experiment Station).

Early Vigor of Maize Plants and Yield of Grain as Influenced by the Corn Root, Stalk, and Ear Rot Diseases, by James R. Holbert, W. L. Burlison, H. Howard Biggar, Benjamin Koehler, George H. Dungan and Merle T. Jenkins. In Jour. Agr. Research, v. 23, no. 8, p. 583-629, 7 pl., 20 fig. February 24, 1923 (In cooperation with Illinois Agricultural Experiment Station).

Investigations of the Rosette Disease of Wheat and Its Control, by Harold H. Mc Kinney. In Jour. Agr. Research, v. 23, no. 10, p. 771-800, 8 pl., 2 fig. March 10, 1923. (In cooperation with the Wisconsin, Illinois, and Indiana agricultural experiment stations).

Symptoms of Wheat Rosette Compared with Those Produced by Certain Insects, by Harold H. Mc Kinney and Walter H. Larrimer. U. S. Dept. Agr. Bul. 1137, 8 p., 4 pl. March 22, 1923. (Joint contributions from the Bureaus of Plant Industry and Entomology, in cooperation with the Illinois, Indiana, and Wisconsin agricultural experiment stations).

Investigations of Heat Canker of Flax, by C. S. Reddy and W. E. Brentzel. U. S. Dept. Agr. Bul. 1120, 18 p., 5 pl., 4 fig. October 26, 1922 (Received January 12, 1923) (In cooperation with the North Dakota Agricultural Experiment Station).

Rusts.

A Cytological Study of Infection of Baart and Kanred Wheats by Puccinia graminis tritici, by Ruth F. Allen. In Jour. Agr. Research, v. 23, no. 3, p. 131-151, 6 pl. January 20, 1923. (In cooperation with the California Agricultural Experiment Station).

*Common Barberry and Black Stem Rust in Indiana, by K. E. Beeson. Indiana Agr. Exp. Sta. Ext. Bul. 118, 8 p., 7 fig. June, 1923.

Hydrogen-ion Concentration and Varietal Resistance of Wheat to Stem Rust and Other Diseases, by Annie May Hurd. In Jour. Agr. Research, v. 23, no. 5, p. 373-386. February 3, 1923.

Destroy the Common Barberry, by E. C. Stakman, U. S. Dept. Agr. Farmers' Bul. 1058, 14 p., 9 fig. Third revision, February, 1923.

*Barberry Eradication Prevents Black Rust in Western Europe, by E. C. Stakman. U. S. Dept. Agr. Circ. 269, 15 p., 3 fig. April, 1923.

*Kill the Common Barberry with Chemicals, by Noel F. Thompson. U. S. Dept. Agr. Circ. 268, 4 p., 3 fig. March, 1923.

Downy Mildews.

Production and Dispersal of Conidia in the Philippine Sclerosporas of Maize, by William H. Weston, Jr. In Jour. Agr. Research, v. 23, no. 4, p. 239-278, 10 pl., 2 fig. January 27, 1923.

Smuts.

Occurrence of Bunt in Rye, by E. F. Gaines and F. J. Stevenson. In Phytopath., v. 13, no. 5, p. 210-215, 2 fig. May, 1923. (In cooperation with Washington Agricultural Experiment Station).

Flag Smut of Wheat, with Special Reference to Varietal Resistance, by W. H. Tisdale, G. H. Dungan and C. E. Leighty. Ill. Agr. Exp. Sta. Bul. 242, p. 503-538, 3 fig. April, 1923.

Experiments with Hot Water, Formaldehyde, Copper Carbohydrate, and Chlorophol for the Control of Barley Smuts, by W. H. Tisdale, J. W. Taylor and Marion A. Griffiths. In Phytopath., v. 13, no. 4, p. 153-160. April, 1923.

Bacteriological Diseases.

A Bacterial Disease of Brome-Grass, Charles S. Reddy and James Godkin. In Phytopath., v. 13, no. 2, p. 74-86, 2 pl. February, 1923.

PHYSIOLOGICAL AND CHEMICAL SUBJECTS.

Accumulation of Aluminum and Iron Compounds in Corn Plants and Its Probable Relation to Rootrots, by G. N. Hoffer and R. H. Carr. In Jour. Agr. Research, v. 23, no. 10, p. 801-823, 21 pl. March 10, 1923. (In cooperation with the Indiana Agricultural Experiment Station).

Effects of the Method of Desiccation on the Carbohydrates of Plant Tissue, by Karl P. Link and W. E. Tottingham. In Jour. Amer. Chem. Soc., v. 45, p. 439-447. February, 1923. (In cooperation with the Wisconsin Agricultural Experiment Station).

On June 30, 1923, the following 44 manuscripts, resulting from the work of the Office of Cereal Investigations, were in press, scheduled to appear in the various series of Departmental publications, in the bulletin series of cooperating State agricultural experiment stations, and in private journals. In addition nine articles on cereal subjects submitted by members of the staff of the Office of Cereal Investigations during 1922, are awaiting publication in the Agricultural Cyclopedia for Young People.

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AGRONOMIC SUBJECTS

Corn.

Acidity of Corn and its Relation to Vegetative Vigor, by Annie May Hurd. Submitted May 26, 1923, for publication in the Journal of Agricultural Research.

Effects of Selection on the Yield of a Cross between Varieties of Corn by F. D. Richey. Submitted July 6, 1922, for publication as a Department Bulletin.

Wheat.

The Inheritance of Growth Habit and Resistance to Stem Rust in a Cross between Two Varieties of Common Wheat, by O. S. Aamodt. Submitted July 7, 1922, for publication in the Journal of Agricultural Research. Galley proof read April 14, 1923; page proof, June 12.

Kota Wheat, by J. A. Clark and L. R. Waldron. U. S. Dept. Agr. Circ. 280. Submitted March 7, 1923; galley proof read June 16.

A Study of Rust Resistance in a Cross between Marquis and Kota Wheats, by H. K. Hayes and O. S. Aamodt. Submitted December 4, 1922, for publication in the Journal of Agricultural Research; page proof read June 23, 1923.

Electrochemical Treatment of Seed Wheat, by C. E. Leighty and J. W. Taylor. Submitted March 31, 1923, for publication as Department Circular.

Polish and Poulard Wheats, by John H. Martin. U. S. Dept. Farmers' Bulletin 1340. Submitted November 27, 1922; galley proof read June 6, 1923; page proof, June 26.



Experiments with Emmer, Spelt, and Einkorn, by J. H. Martin and C. E. Leighty. Submitted March 7, 1923, for publication as a Department Bulletin.

Improvement of Kubanka Durum Wheat by Pure-Line Selection, by R. W. Smith, L. R. Waldron, and J. A. Clark. Submitted March 24, 1923, for publication as a Department Bulletin.

Experiments in Wheat Production on the Dry Lands of the Western United States, by D. E. Stephens, M. A. Mc Call, and A. F. Bracken. U. S. Dept. Agr. Bul. 1173. Submitted August 31, 1922.

Oats.

A Multiflorous Variation in Burt Oats, by F. A. Coffman and K. S. Quisenberry. Approved January 6, 1923, for publication in the Journal of Heredity.

Naked Oats, by T. R. Stanton. Approved December 14, 1922, for publication in Journal of Heredity.

Prolific and Other Dwarf Oats, by T. R. Stanton. Approved January 26, 1923, for publication in the Journal of Heredity.

Rice.

How to Grow Rice in California, by J. W. Jones. Submitted December 2, 1922, for publication as a Farmers' Bulletin.

Grain Sorghums and Broomcorn.

Grain Sorghum Experiments at the Woodward, Okla., Field Station, by J. B. Sieglinger. Submitted November 28, 1922, for publication as a Department Bulletin.

Minor Cereals.

Growing of Rye in the Western Half of the United States, by J. H. Martin and R. W. Smith. Submitted March 16, 1923, for publication as a Farmers' Bulletin.

General or Miscellaneous.

The Minimum Temperature of Germination of Seeds, by F. A. Coffman. Approved January 26, 1923, for publication in the Journal of American Society of Agronomy.

Cereal Experiments at Chico, California, by V. E. Florell. U. S. Dept. Agr. Bul. 1172. Submitted July 31, 1922; galley proof read June 30, 1923.



PATHOLOGIC SUBJECTS.

Imperfect and Sac Fungi.

Some Graminicolous Species of *Helminthosporium*. I., by Charles Drechsler. Submitted July 31, 1922, for publication in the Journal of Agricultural Research.

Rosette Disease of Wheat and its Control, by A. G. Johnson, H. H. McKinney, R. W. Webb, and C. E. Leighty. Submitted June 19, 1923, for publication in Farmers' Bulletin series to supersede Farmers' Bulletin 1226.

The Influence of Soil Temperature and Moisture on Certain Phases of the *Helminthosporium* Disease of Wheat and Barley, by H. H. McKinney. Submitted March 30, 1923, for publication in the Journal of Agricultural Research.

Varietal Resistance in Winter Wheat to the Rosette Disease, by R. W. Webb, C. E. Leighty, G. H. Dungan and J. B. Kendrick. Submitted April 27, 1923, for publication in the Journal of Agricultural Research.

Rusts.

Cytological Studies of Infection of Baart, Kanred, and Mindum Wheats by *Puccinia graminis tritici* Forms III and XIX, by Ruth F. Allen. Submitted May 8, 1923, for publication in the Journal of Agricultural Research.

Common Barberry and Black Stem Rust in Ohio, by J. W. Baringer and W. G. Stover. Approved May 16, 1923, for publication as an extension bulletin of the Ohio State University.

Relation of Barberries to Stem Rust of Wheat, by K. E. Beeson. Approved February 9, 1923, for publication in the Proceedings of the Indiana Academy of Sciences.

The Role of the Genus *Rhamnus* in the Dissemination of Crown Rust, by S. M. Dietz. U. S. Dept. Agr. Bul. 1162. Submitted July 31, 1923; galley proof read May 9, 1923.

The Mode of Inheritance of Resistance to *Puccinia graminis* with Relation to Seed Color in Crosses between Varieties of Durum Wheat, by J. B. Harrington and O. S. Aamodt. Submitted December 4, 1922, for publication in the Journal of Agricultural Research; page proof read June 23, 1923.

Studies on the Life History of Stripe Rust, *Puccinia glumarum*, by C. W. Hungerford. Submitted July 15, 1922, for publication in the Journal of Agricultural Research; galley proof read May 9, 1923; page proof, May 23.

Specialized Varieties of *Puccinia glumarum* and Hosts for Variety *Tritici*, by C. W. Hungerford and C. E. Owens. Submitted March 31, 1923, for publication in the Journal of Agricultural Research.

Barberry Eradication in Illinois, by F. E. Kempton, G. C. Curran and E. D. Griffin. Approved June 6, 1923, for publication in the Proceedings of the Illinois Academy of Sciences.

A Statistical Study of the Comparative Morphology of Biologic Forms of Puccinia graminis, by M. N. Levine. Submitted July 1, 1922, for publication in the Journal of Agricultural Research; galley proof read May 12, 1923.

Resistance in Rye to Leaf Rust, Puccinia dispersa, by E. B. Mains and C. E. Leighty. Submitted March 17, 1923, for publication in the Journal of Agricultural Research.

Spores in the Upper Air, by E. C. Stakman, A. W. Henry, G. C. Curran, and W. N. Christopher. Submitted June 30, 1922, for publication in Journal of Agricultural Research; galley proof read May 1, 1923; page proof, May 23.

Biologic Forms of Puccinia graminis on Varieties of Avena spp., by E. C. Stakman, M. N. Levine, and D. L. Bailey. Submitted December 19, 1922, for publication in the Journal of Agricultural Research; galley proof read May 29, 1923; page proof, June 20.

Downy Mildews.

A Method of Treating Maize Seed to Destroy Adherent Spores of Downy Mildew, by Wm. H. Weston, Jr. Submitted September 30, 1922, for publication in the Journal of Agricultural Research; galley proof read, May 12, 1923; page proof, June 6.

Smuts.

The Relation of Certain Soil Factors to the Infection of Oats by Loose Smut, by Lucille K. Bartholomew and Edith Seymour Jones. Submitted July 10, 1922, for publication in Journal of Agricultural Research; galley proof read May 23, 1923; page proof, June 12.

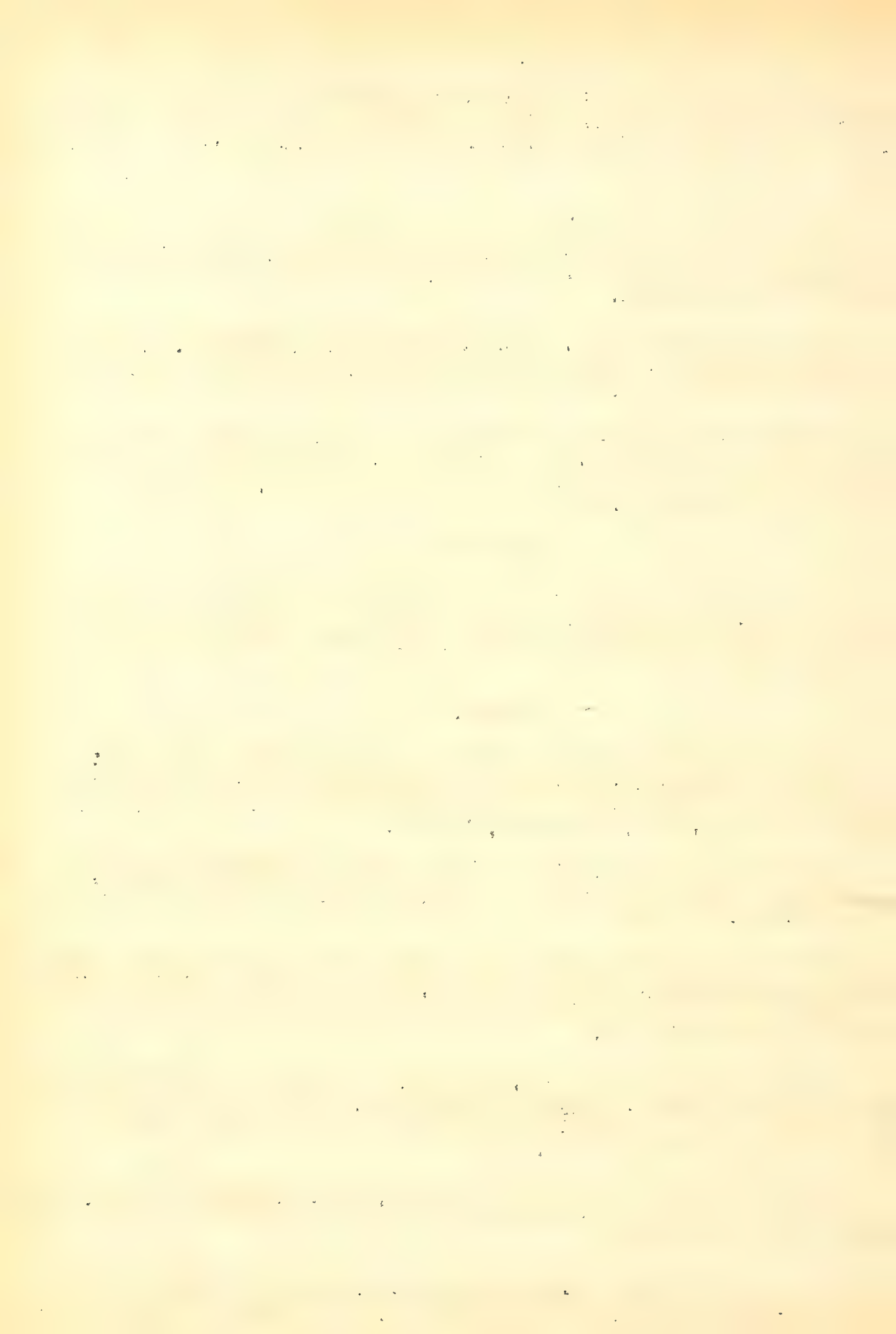
The Toxicity of Copper Sulphate to the Spores of Tilletia tritici, by F. N. Briggs. Submitted November 1, 1922, for publication in the Journal of Agricultural Research.

The Influence of Temperature on the Spore Germination of Ustilago zae, by Edith Seymour Jones. Submitted July 1, 1922, for publication in the Journal of Agricultural Research; galley proof read May 14, 1923; page proof May 26; second page proof, June 12.

The Influence of Temperature, Moisture, and Oxygen on the Spore Germination of Ustilago avenae, by Edith Seymour Jones. Submitted July 10, 1922, for publication in the Journal of Agricultural Research; galley proof read May 5, 1923; page proof, May 22.

Fungicidal Dusts for the Control of Bunt, by W. W. Mackie and F. N. Briggs. Approved March 31, 1923, for publication as a bulletin of the California Agricultural Experiment Station.

Flag Smut of Wheat, by W. H. Tisdale, G. H. Dungan and C. E. Leighty. U. S. Dept. Agr. Circ. 273; submitted March 6, 1923; galley proof read May 10; page proof, June 13.



Studies in the Physiology and Control of Bunt or Stinking Smut of Wheat, by H. M. Woolman and H. B. Humphrey. Submitted December 8, 1922, for publication as Department Bulletin.

Summary of Literature on Bunt or Stinking Smut of Wheat, by H. M. Woolman and H. B. Humphrey. Submitted December 9, 1922, for publication as Department Bulletin.

Bacteriological Diseases.

A Bacterial Stripe Disease of Proso Millet, by Charlotte Elliott. Submitted March 13, 1923, for publication in the Journal of Agricultural Research.

CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)



Vol. 15

August 10, 1923

No. 19

Personnel (August 1-10) and Field Station (July 16-31) Issue.

PERSONNEL ITEMS

Dr. C. R. Ball writes from Aberdeen, S. Dak., under date of August 6, that he planned to spend two or three days at the biologic laboratory on Big Stone Lake near Brown Valley, Minn., and then to visit the Minnesota, Wisconsin, Illinois, and Indiana agricultural experiment stations. He states that there are large acreages of corn and oats in South Dakota and that corn is generally in good condition. On August 3 he visited the North Dakota Agricultural Experiment Station at Fargo and on August 4 the Forage Crop Field Station at Redfield, S. Dak.

Mrs. Marguerite R. de Aguilera, clerk, was transferred August 1 from the Treasury Department to fill the vacancy caused by the resignation of Miss Myrtis V. Hall.

Dr. Harry V. Harlan expected to leave Srinagar, the capital of Kashmir, India, about the middle of July for Bombay, thence to sail for western Europe, where he expects to spend several weeks before going to Abyssinia to be there during the grain harvest.

Frederick D. Richey, agronomist in charge of corn investigations, left August 3 for points in Ohio, Indiana, Iowa, Minnesota, North Dakota, Montana, Wyoming, Colorado, Nebraska, Kansas, and Oklahoma to visit cooperative corn experiments and to confer with officials of agricultural experiment stations concerning corn investigation problems. Mr. Richey will be gone about five weeks.

MANUSCRIPTS AND PUBLICATIONS.

An article entitled "Disease Resistance as a Factor in the Control of Plant Diseases," by James G. Dickson, was approved August 1 for publication in the Transactions of the Wisconsin State Horticultural Society.

Galley proof of Farmers' Bulletin 1358, entitled "Growing Rye in the Eastern Half of the United States," by John H. Martin and Ralph W. Smith, was read August 4.

The article entitled "Some Graminicolous Species of *Helminthosporium*: I," by Charles Drechsler has been published in the Journal of Agricultural Research, v. 24, no. 8, p. 641-739, 33 pl. May 26, 1923. Literature cited, p. 731-739.

Articles entitled "Naked Oats," by T. R. Stanton, and "A Multiflorous Variation in Burt Oats," by F. A. Coffman and K. S. Quisenberry, have been published in The Journal of Heredity, v. 14, no. 4, July, 1923. This number was received August 7.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs) (No report)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor) (August 11) All the small grains have been thrashed. On the whole, the season was favorable both for yield and the harvesting of crops.

Oats yielded above the average except in a few cases. Straw yields were low, but the bushel weight of the grain was unusually high, ranging from 31.0 to 40.0 pounds. The season was favorable for Kanota and Fulghum, both of which yielded more than Culberson, the check variety. Kanota slightly out-yielded Fulghum, as was the case last year. The Winter Turf selections, which are considered the best adapted to conditions at the Arlington Farm, yielded less than the check. Two new selections made by T. R. Stanton from Winter Turf hybrids appeared especially promising.

The yields of the oat varieties for 1923, with the average of the neighboring checks for comparison, are shown in the following table:

Acre Yield in Bushels of Varieties of Winter Oats Grown in Triplicate Series at Arlington Experiment Farm in 1923.

Variety	C. I. No.	Acre yield. bu.	Yield of check.	Bushels + or - from check.
Fulghum	708	66.4	64.5	+ 1.9
Kanota	839	68.6	64.5	+ 4.1
Ferguson	966	35.6	64.5	-28.9
Dwarf Culberson	748	52.1	64.5	-12.4
Bicknell	206-155	70.3	64.6	+ 5.7
Aurora	831	66.1	64.6	+ 1.5
Culberson	273-I-14	62.5	64.6	- 2.1
Red Rustproof	1815	45.4	64.7	-19.3
Winter Turf	431	57.4	64.7	- 7.3
" "	435-4	61.3	64.7	- 3.4
" "	541-4	63.5	64.7	- 1.2
Hatchett	838	65.4	62.7	+ 2.7
Winter Turf sel.		72.9	62.7	+10.2
" " "		69.1	62.7	- 6.4

Yield of Single 40th-acre Plots.

Variety	C. I. No.	Acre yield, bu.	Yield of check.	Bushels + or - from check.
Black	691	54.0	64.3	-10.3
Hutcheson	947	56.1	64.3	- 8.2
Hardy Rustproof		62.9	64.3	- 1.4
1001 H 1 - 4 B		70.0	64.3	+ 5.7
1001 F 1 - 1 B		64.5	64.3	+ .2

The yields of the winter wheat varieties were above average. Only two varieties, Pennsylvania No. 44 and Red Rock, outyielded the average of the neighboring Purplestraw check plots. The former variety was grown in a single 40th-acre plot in 1922 and appeared especially vigorous in spring, but at flowering time it lodged 100 per cent and the yield was poor. This year, though no lodging occurred in Pa. No. 44, a high ratio of straw to grain was obtained, which is believed to be undesirable at Arlington Farm. Red Rock has been one of the best bearded wheats in the wheat varietal experiment during the past 5 years. Two selections, designated as Red Row 959 and Red Row 62, made by Dr. C. E. Leighty, have shown promise in the past two years. One is of the Poole type and the other a bearded, clavate white-chaffed selection with stiff straw.

three

The average yield of the $\frac{3}{4}$ 40th-acre plats of each variety is given in the following table:

Yield of Winter Wheat Varieties Grown in Triplicate 40th-acre plats
In 1923.

Variety.	C. I. No.	Acre yield bu.	Yield of check, 6 plat average.	Gain or loss from check.
Pennsylvania No. 44	-	37.4	34.1	- 3.3
Red Rock	5976	34.1	32.7	- 1.4
Poole	3489	33.7	33.9	- 0.2
Rod Row No. 959	-	33.3	33.5	- 0.2
Rod Row No. 62	-	31.9	33.5	- 1.6
Rocky Mountain	1930	31.9	34.0	- 2.1
Forward	-	31.8	34.1	- 2.3
Shepherd	6163	31.9	34.4	- 2.5
Poole	1979	31.8	34.4	- 2.6
Dietz	1931	31.3	33.9	- 2.6
Stoner	2930	30.6	33.3	- 2.7
Fultz	1923	26.7	29.7	- 3.0
Purplestraw	1957	30.9	34.0	- 3.1
Early Genessee Giant	1744	29.6	32.7	- 3.1
Missouri Bluestem	1912	30.3	33.5	- 3.2
Bearded Purplestraw	1911	30.4	33.9	- 3.5
Poole type	1753	29.8	33.3	- 3.5
Dawson	6161	29.1	32.7	- 3.6
Rod Row No. 294	-	30.3	34.0	- 3.7
Hybrid	3514	29.3	33.3	- 4.0
Leap	4823	25.7	29.7	- 4.0
Hybrid	3608	28.7	32.8	- 4.1
New Amber Longberry	1973	28.6	32.8	- 4.2
Brown Fife	1973	28.5	32.8	- 4.3
Illini Chief	5406	29.0	33.3	- 4.3
Ching	180	28.6	33.9	- 5.3
Rod Row No. 115	-	30.0	35.6	- 5.6
Rod Row No. 676	-	27.0	32.8	- 5.8
Fulcaster	6162	28.6	34.4	- 5.8
Mammoth Red	2008	28.0	34.0	- 6.0
Lancaster Fulcaster	1945	28.3	34.4	- 6.1
Bearded Purplestraw	1911-1	23.1	29.2	- 6.1
Illinois Fultz	-	26.6	34.1	- 7.5
Fultz	3598	20.5	29.2	- 8.7
Currell	3326	21.0	29.7	- 8.7
Power	3597	25.2	34.0	- 8.8
Kanred	5146	24.6	34.1	- 9.5
Haynes	2274	23.4	34.0	-10.6
Nebraska Hybrid	5147	10.4	29.2	-18.8

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love)
(August 10) Weather conditions particularly for the section in which Ithaca is located have been rather unfavorable for large yields of grain. It has been unusually dry, with the result that the grain was short, particularly spring-sown crops.

Harvest has been completed and threshing is now under way. The drill plats and increase plats of wheat, oats, and barley, as well as the advance field test of wheat are threshed. Yields from the advance test for the wheat follow:

Yields from Advance Test of Wheat Varieties and Selections at Cornell University, 1923.

Variety.	Acre yield, bu.	Gain or loss over calculated check.
Check, Honor	28.6	
Junior No. 6	27.2	- 1.2
O. A. C. No. 104	29.9	+ 1.7
Check	28.1	
1185al-73-1)		
Red Wave x Golden Cross)	28.2	0
1027al-4-7-6*	23.7	+ 4.6
Check	28.3	
1027al-8-6-12*	28.8	+ .6
H 86 Currell's Prolific x Fultz	27.2	- .9
Honor	27.9	
Forward	27.7	- .1
Penn. No. 44	23.8	- 3.9
Honor	27.6	
Gypsy selection	31.5	+ 3.6
Red Rock	27.4	- .8

*Golden Cross x New Columbia

Scawfly was very serious in the plats. Hybrid 1185al-73-1 stood up very well, Honor and Forward also stood fairly well.

Material from the hybrid nursery has all been harvested. While the plants were not large, we obtained sufficient material for note-taking and for continuing the work. The new lot of material sown from the various hull-less oat crosses has been harvested in very good shape for note-taking. A large number of selections from new oats crosses in which Cornellian was used as one parent have been made for test in our oat nursery next year.



Numerous visitors have been here to look over the work in grain improvement. These included Dr. C. E. Leighty, M. N. Pope, and W. J. Sando from Cereal Investigations, H. A. Wallace, Editor of Wallaces' Farmer, Des Moines, Iowa, F. Kagawa and T. Sasaki from Japan, besides several from various parts of New York State.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (July 27) A day or two ago, I visited the Gueydan and Kaplan sections to inspect fields of soybeans and crops grown on land that was seeded to soybeans last year. A splendid crop of rice is growing on land that produced the heaviest growth of soybeans last year at Kaplan. Six acres of this land is devoted to cotton, which is excellent and is expected to yield at least one bale per acre. This particular piece of land had produced very poor crops previous to the time it was seeded to soybeans. A small acreage in corn also indicates that the soil was much improved by the growth of soybeans last year. Unfortunately practically the entire crop of 300 acres of Biloxi soybeans planted by the Kaplan interests this year was broadcasted. The weather during the spring months was very unfavorable, as frequent showers occurred which packed the soil, making it unfavorable for the growth of soybeans but favorable for the growth of native weeds. The result is that the entire 300 acres is very satisfactory for hay production. The same company also broadcasted about 200 acres of milo for hay purposes, which was practically a failure.

The rice crop in the vicinity of Crowley, as well as at Gueydan and Kaplan is, in my judgment, better than it has been in years. It is late but the fields are much freer from weeds than usual. Most of the crop on old land is badly infested with barnyard grass, which also is bad in many late-seeded fields. The relatively dry winters of the past two years apparently have allowed this seed to remain uninjured in the soil, while following the wet winters of 1919 and 1920 the grass has found only thinly scattered through some fields and presumably the seed had been destroyed by unfavorable weather.

In traveling through the country, I noted a few small fields of rice that had headed. Judging from the appearance of most of the crop, it was seeded during the month of May. Newspaper reports state that a small acreage of rice has harvested in Vermilion parish July 4 and threshed on the 12th. One sack of this was sold on the Board of Trade in New Orleans, and was the first new rice of the season.

The work on the Station is progressing nicely. Our plats as a whole are very uniform, and the indications are that good results will be obtained. Most of the plats are comparatively free from weeds, except some of those in the new fertilizer series. It was rather a surprise to me to have "tea" weeds come up very thickly in many of these plats, for this land has been in soybeans for several years, and was apparently free of other growth. We are fairly well up with the work on the rest of the farm, and with a few extra men next week we will be able to remove these weeds from the plats.

Bad weather during May and June interfered greatly with the seedling of soybeans, and obliged me to plant as late as June 28. We have good stands and all have been well cultivated. The fields are clean, and the plants are healthy in appearance. Unfortunately, many of the farmers who purchased soybean seed from us last winter were unable to seed on account of bad weather. This was unfortunate, as there was active interest in soybeans this spring. There was little good weather for preparing the land until the first week in July, which would delay seeding until about the middle of July. In one or two instances I advised against the late seeding. 1.

Agricultural Experiment Station, Baton Rouge (H. Stoneberg) (No report)

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (No report)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (No report)

IOWA

Agricultural Experiment Station, Ames (L. C. Burnett) August 9) Yields obtained from about two-thirds of the plats indicate that the average acre yield of wheat will be about 40 bushels. The quality is exceptionally good, only the very poorest samples testing as low as 60 pounds to the bushel. Acre yields of oats run from 60 to 90 bushels, which is much higher than was expected after the two periods of hot wind late in June and early in July. Rain which fell August 1 probably will insure the corn crop, although the late plantings were showing considerable drought damage before the rain.

Agricultural Experiment Station, Ames (Investigation of Crown Rust of Oats, S. M. Dietz) (No report).

Iowa State College, Ames (Barberry Eradication, J. H. Muncie) (No report)

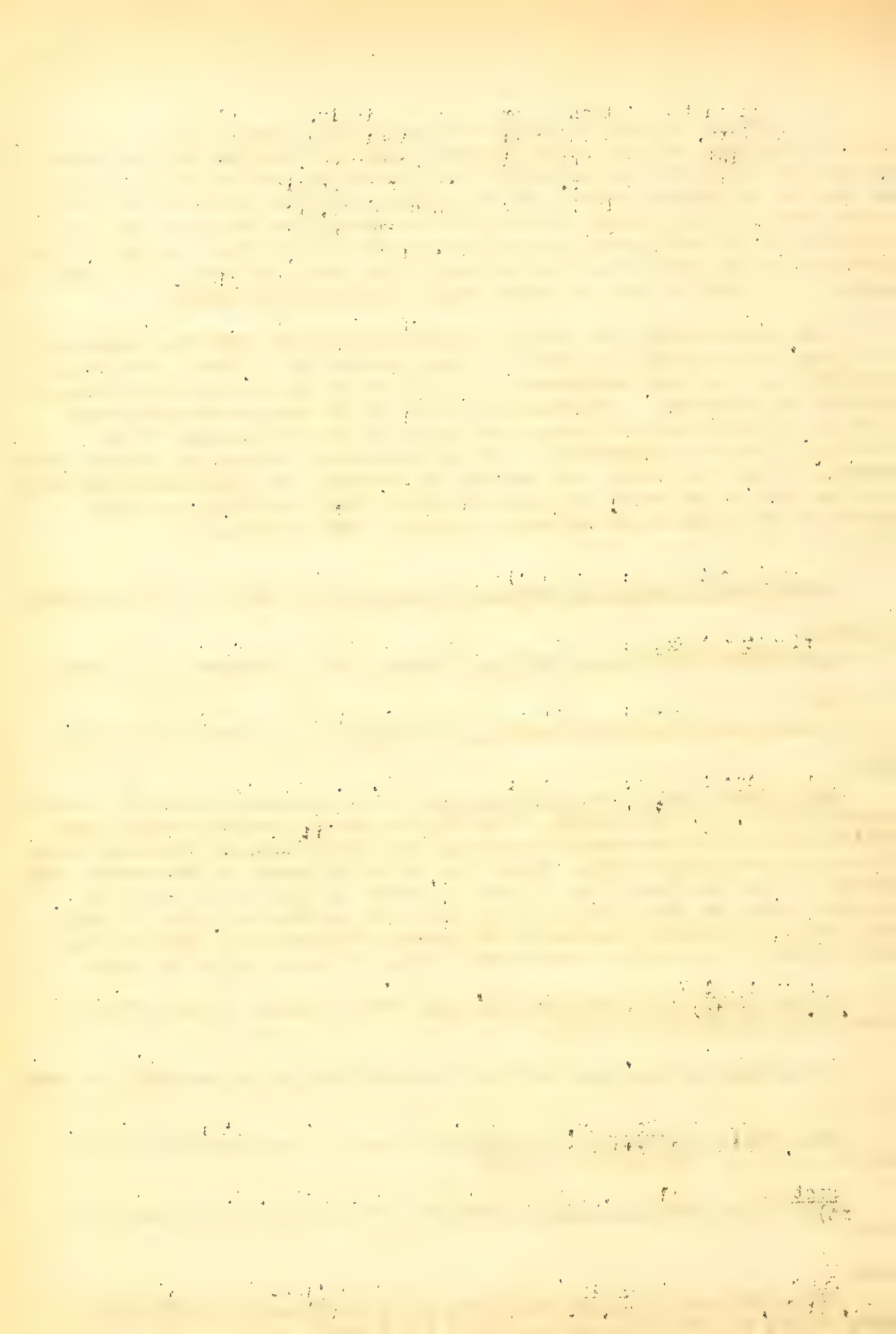
ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (No report)

Post Office Building, Urbana (Barberry Eradication, G. C. Curran) (No report)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. M. Hoffer) (No report)



Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (No report)

College of Agriculture, Purdue University, La Fayette (Barberry Eradication, K. E. Beeson) (No report)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, J. W. Baringer) (July report) Eighteen Federal field assistants and one deputy inspector of the Ohio State Department of Agriculture assembled at Sidney, Ohio, July 2 to receive instructions and to make plans for the 1923 barberry eradication field season. Four Government scouts and an additional inspector from the State Department have joined the force since July 2.

All scouts assisted in making applications of kerosene to several hundred escaped barberry bushes on a farm belonging to Elizabeth Wagner near Sidney, July 2 and 3. Kerosene had been used experimentally on barberries at this location with remarkable success in 1921 and in 1922. Field men were thus given an opportunity to observe the effects of kerosene on barberries, actually to make the applications, and to acquaint themselves with common barberries in wild habitats.

The original survey of Cincinnati is a tedious process. The work is almost half completed.

Present indications are that common barberries will be listed on nearly 500 properties within the city limits. Cincinnati newspapers have been generous with space for publicity. The workers are encountering very little opposition and the barberries are being removed.

One scout was kept busy during July investigating reports of serious local stem-rust epidemics and checking up on control results within the territory previously covered by the farm-to-farm survey, where barberries had caused serious damage in former years.

Three and one-half counties were covered by the original farm-to-farm survey in July. A resurvey for sprouts was started in Montgomery County.

MICHIGAN

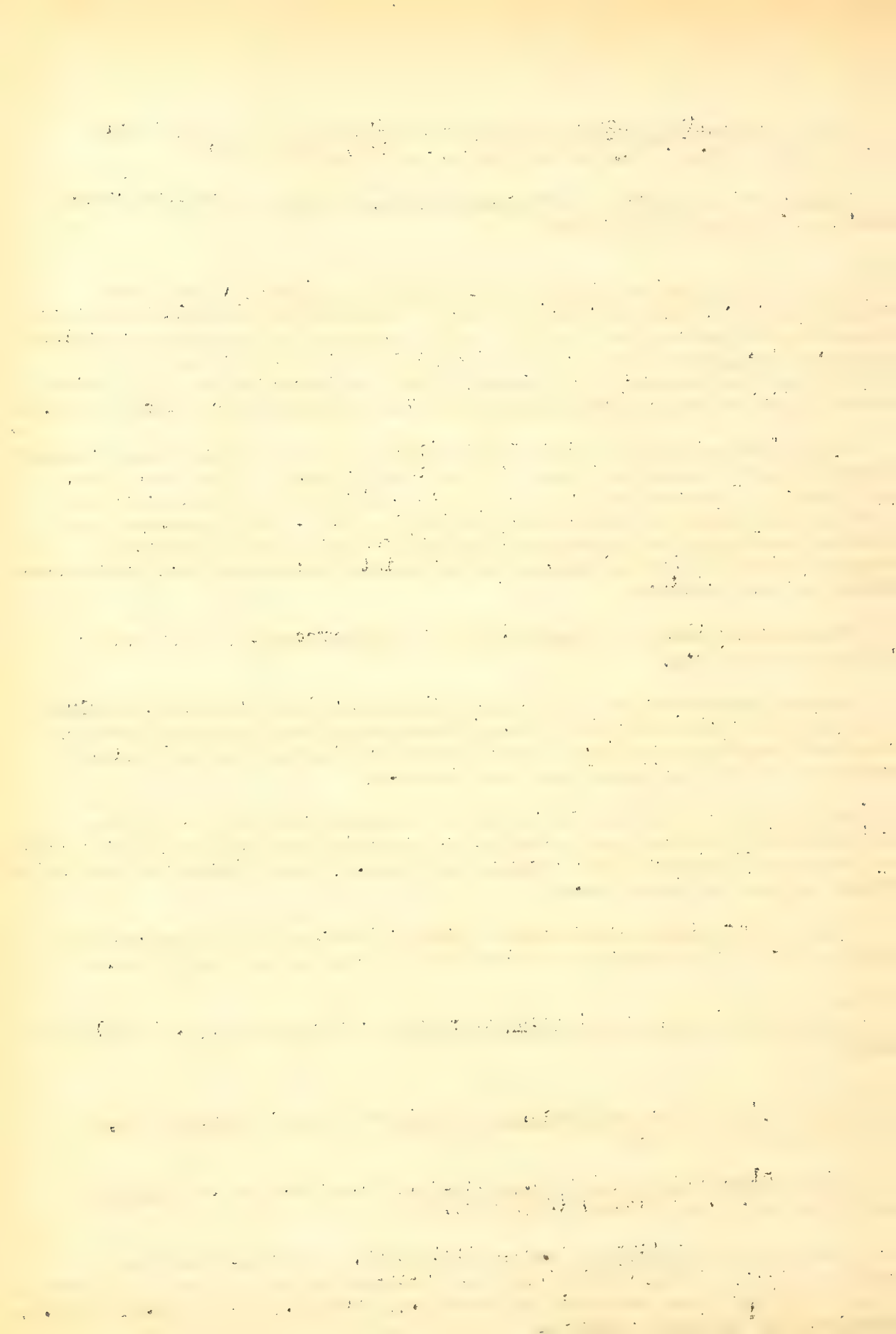
Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) (No report)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab Investigations, J. G. Dickson) (No report)

Agricultural Experiment Station, Madison (Wheat Rosette and Take-All Investigations, H. H. Mc Kinney) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker) (July 31) The farm-to-farm survey and the resurvey of all towns have been completed in Green Lake, Marquette, Washington, Ozaukee, Sheboygan, and Milwaukee counties.



Thirty tons of salt have been used already in eradication at Black Earth, Wis. About 15 tons more will complete the job. The wild area located at Marshall is also to be treated with salt. About 25 tons will be required.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt) (July 18) A rather extensive planting was made in the spring-wheat nursery this year. Approximately 5,000 individual hybrid plant rows are being grown under an artificial epidemic of stem rust. This epidemic is produced with the available biologic forms of stem rust which have been found in the spring-wheat area. At present the Marquis check rows (every 10th row) have a rust infection percentage of about 90.

About 2,000 individual hybrid plant rows also are being grown under normal conditions (no artificial epidemic). More than the usual rust infection is present in this nursery this year. Marquis check rows have an infection percentage of 35 to 40.

Several hundred rod rows of hybrid selections are being grown at University Farm and at the substations. A number of these selections appear to be very promising. Last year and as far as observed this year they held up in their resistance to rust. A few of the better selections were sent out for trial by Dr. H. K. Hayes to Morden, Winnipeg, Brandon, Indian Head, Saskatoon, and Rosthern, Canada, and Fargo, N. Dak.

Harvesting of the winter-wheat rod rows has just been finished. The individual plant rows are later in maturing and will be harvested next week.

The plats at the Waseca Substation were examined June 26. Winter wheat had 2 to 3 per cent of stem rust infection compared to 25 per cent at this same date last year. Only traces of both stem and leaf rust were present on the spring wheat.

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report)

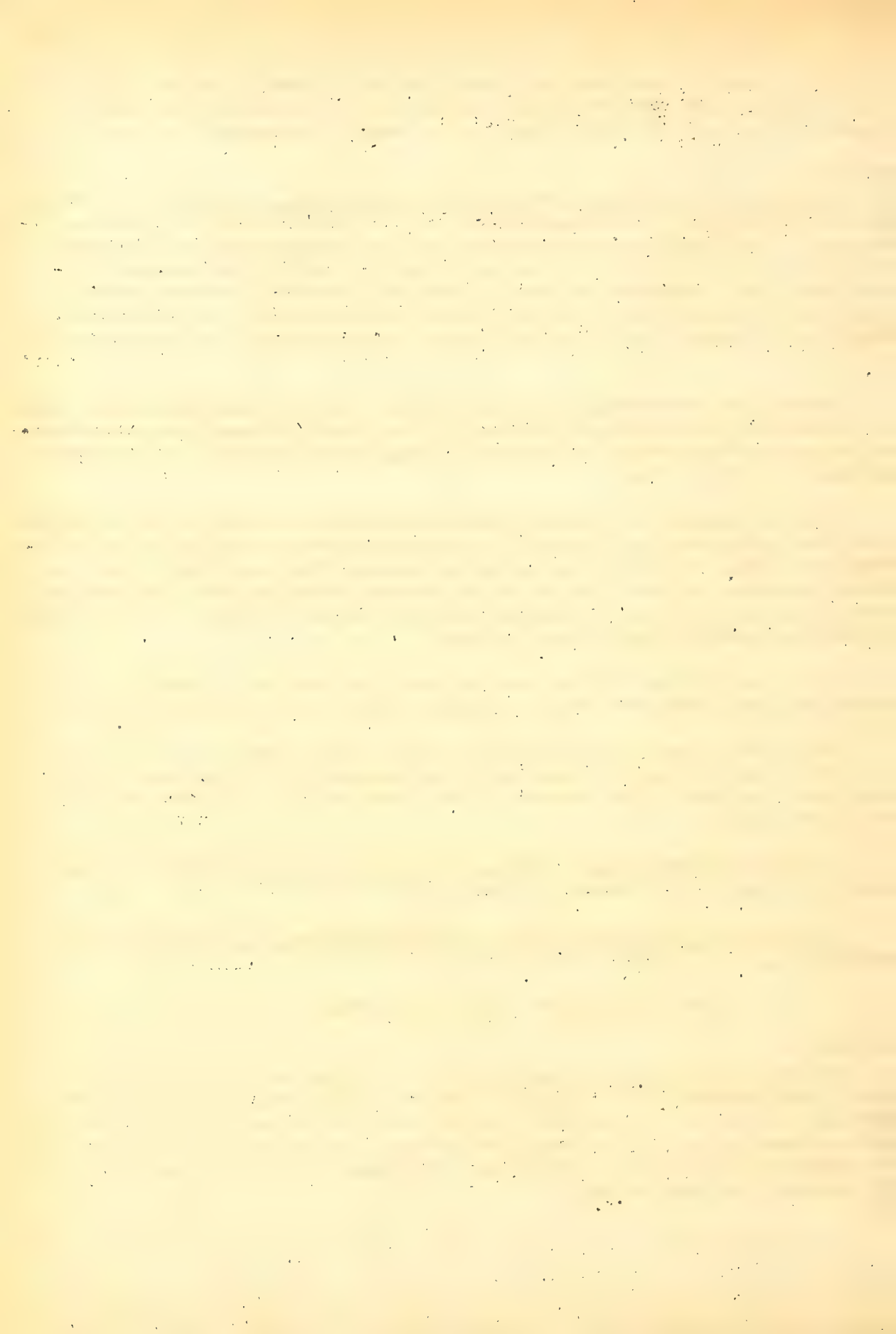
Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (No report)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger) (August 2) The total precipitation for the month of July was 0.69 inch, which fell in three showers. It is now questionable whether rain will occur before the broomcorn and sorghums are too badly damaged to recover. As the main seedlings of broomcorn and sorghums are now heading, the drought is rapidly cutting down the chances for good yields.

Heads are being bagged as they appear and it is likely that the earlier varieties will yield something in spite of the drought. Milo appears to be withstanding the dry weather better than other crops in this section, at least in part because the milo was seeded later than the kafir. Most of the milo was sown in June and has not started to head; in fact, it is only from 1 1/2 to 3 feet in height.



Maximum temperature for last half of July was 105^o, July 31; minimum, 61^o on the 28th. For the 24 hours from 8 a. m., July 31 to 8 a. m., August 1, an evaporation of 0.615 inch occurred, which is the highest for this year to date. Precipitation July 28, 0.41 inch.

KANSAS

Agricultural Experiment Station, Manhattan (J. H. Parker) (No report)

Hays Branch Experiment Station, Hays (A. F. Swanson) (No report)

COLORADO

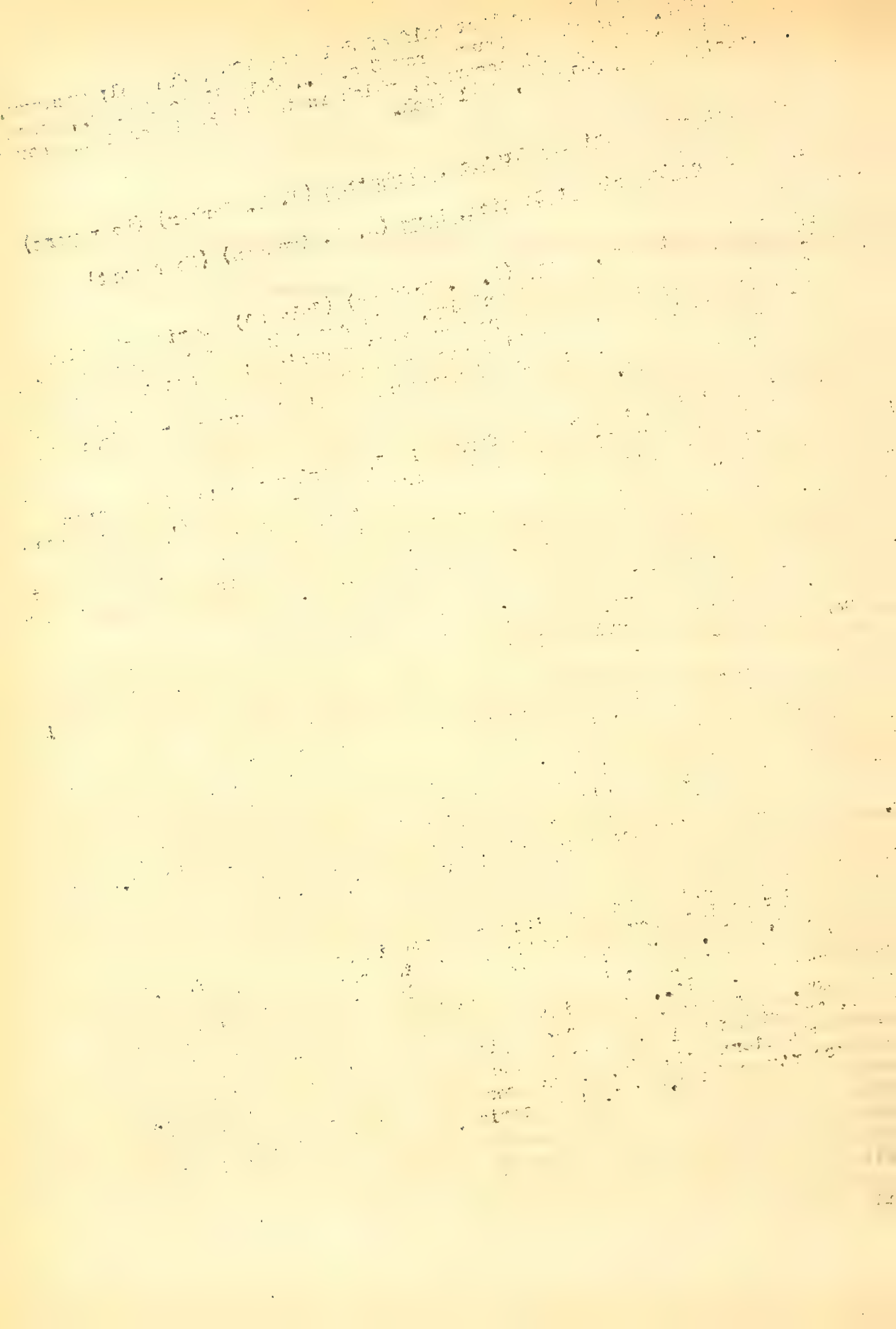
Akron Field Station, Akron (F. A. Coffman) (July 20) During the first week of July the weather was hot and dry. All crops in this section suffered from drought. Several heavy showers have fallen during the past ten days and at present the soil is well supplied with moisture. Temperatures continue to run high, but with an ample supply of moisture available crops are making an exceedingly rapid growth.

Harvest started on the Station farm July 7. Barley was the first crop to ripen and practically all plats of this crop have now been cut. Practically all of the oats were harvested during the week starting July 8. Only the later maturing varieties of barley and oats remain to be harvested. The first variety of spring wheat was cut July 14. Most of the varieties of spring common wheat should be in the shock before the end of the week.

Nursery harvest is well under way. About 1,500 to 2,000 rod rows of barley and oats have been cut. The spring wheat will not be ripe enough to cut before the last week in July and it is not likely that the winter wheat will be cut much before August 1.

Corn and the sorghums are making an exceptional growth. Corn has just started to tassel in the varietal experiment. In the breeding plat the corn has been tasseling for over two weeks. Corn selfing started July 4. Some 2,000 to 2,500 stalks have been tagged. Most of the corn already tagged has been in the rows grown from selections obtained in Canada by Fred D. Richey. Later corn, including our local varieties, has just started to tassel. The peak of the corn selfing work possibly will be reached in about a week or ten days.

During the week of July 8 an auto trip was made in company with E. A. Lunaren, State Leader of barberry eradication, into the territory east of Akron as far as Wray, Colo. From Wray a trip was made into the territory south. The best wheat in this section appears to be that to the south of Wray, although from Otis, Color., east winter wheat is far better than around Akron Field Station. A rather serious rust epidemic was starting in the section July 10, and with ideal conditions since some damage to wheat probably will result in northeastern Colorado. Acropyron surrounding a barberry bush removed from a property in Yuma, Colo., this spring, was very heavily infected with rust.



On July 11 a drive was made to Benkleman, Nebr., with the idea of meeting Doctors E. D. Ball and C. R. Ball at Trenton, Nebr., and bringing them back to Akron Field Station. The roads were too heavy for completing the trip and the car was left at Benkleman. The crops seen in western Nebraska were exceptionally good. Much of the wheat would yield close to 30 bushels per acre. Corn was just starting to tassel. The corn in this section is excellent. As more rain than necessary had been received, many fields were weedy.

A second trip was made to Benkleman, Nebr., July 14, to bring back the car left there July 11. On the night of July 14 a heavy rain fell in this section. Some corn was washed out and much of the wheat and corn was ~~blown~~ down.

During the past two weeks the following persons have visited the Akron Field Station: E. A. Lungren, State Leader of the barberry eradication campaign, July 10; Dr. E. D. Ball, Director of Scientific Work, and Dr. C. R. Ball, Cerealist in Charge, July 12; and J. H. Martin, agronomist in western wheat investigations, July 15 and 16.

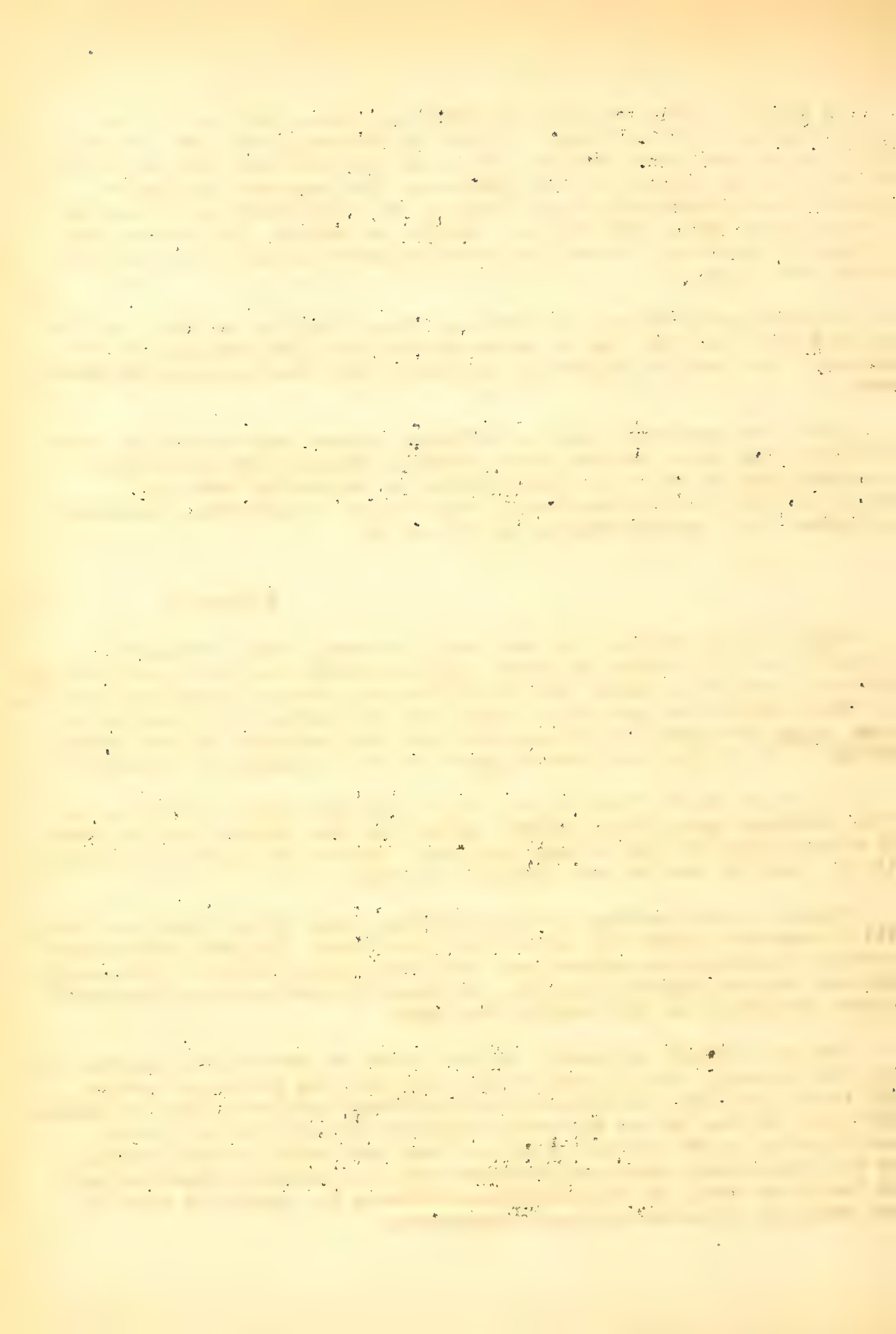
(August 1)

July has been an extremely busy month at Akron. While considerable moisture has fallen during the month field operations have not been seriously hindered. Harvesting of the more than 500 cereal plats was completed July 31. The winter nursery has not yet been cut, but practically all of the barley, oats, wheat, and spring wheat nurseries have been harvested for some time. Harvest of the winter-wheat nursery probably will be completed by August 5.

As a whole the 1923 cereal crop will be the best grown at Akron since 1920. Although spring wheat usually yields less than winter wheat at Akron, the reverse probably will be true this year. However the winter wheat yields will be about the same as were harvested in 1922.

Harvest in this section is well under way. Most of the wheat and barley will be harvested before the end of the present week. The area surrounding Akron Field Station has suffered much more from lack of moisture this season than has eastern Colorado generally. An unusually good crop is in prospect in many localities of this part of the State.

July was a moist, hot month, and the growth of corn and the sorghums has been very unusual. Corn is taller than usual and many fields are now in full tassel and silk. An increase field of Akron White corn looks exceptionally good. Unless hail or dry weather damages this field it will yield possibly close to 40 bushels per acre, a very good yield in this section. For the past several months at Akron corn has been bringing almost as much per bushel as wheat. If this condition continues the growing of corn in this district will need no other encouragement.



Work in the selfing plat has gone forward rapidly. Mr. Churchill has spent most of his time there for the past month. By the first of August probably 4,500 selfs will have been made. While we have had considerable wind and several heavy rains the past month, only a few sacks have blown off.

The Station was visited July 24 by V. H. Florell, in charge of cereal experiments at Davis, Calif., and on July 26 M. N. Levine paid us a very brief visit while taking notes on the uniform rust nursery.

Agricultural College, Fort Collins (Barberry Eradication, E. A. Lungren)
(No report)

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel) (No report)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, R. U. Cotter) (No report)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, L. D. Hutton)
(No report)

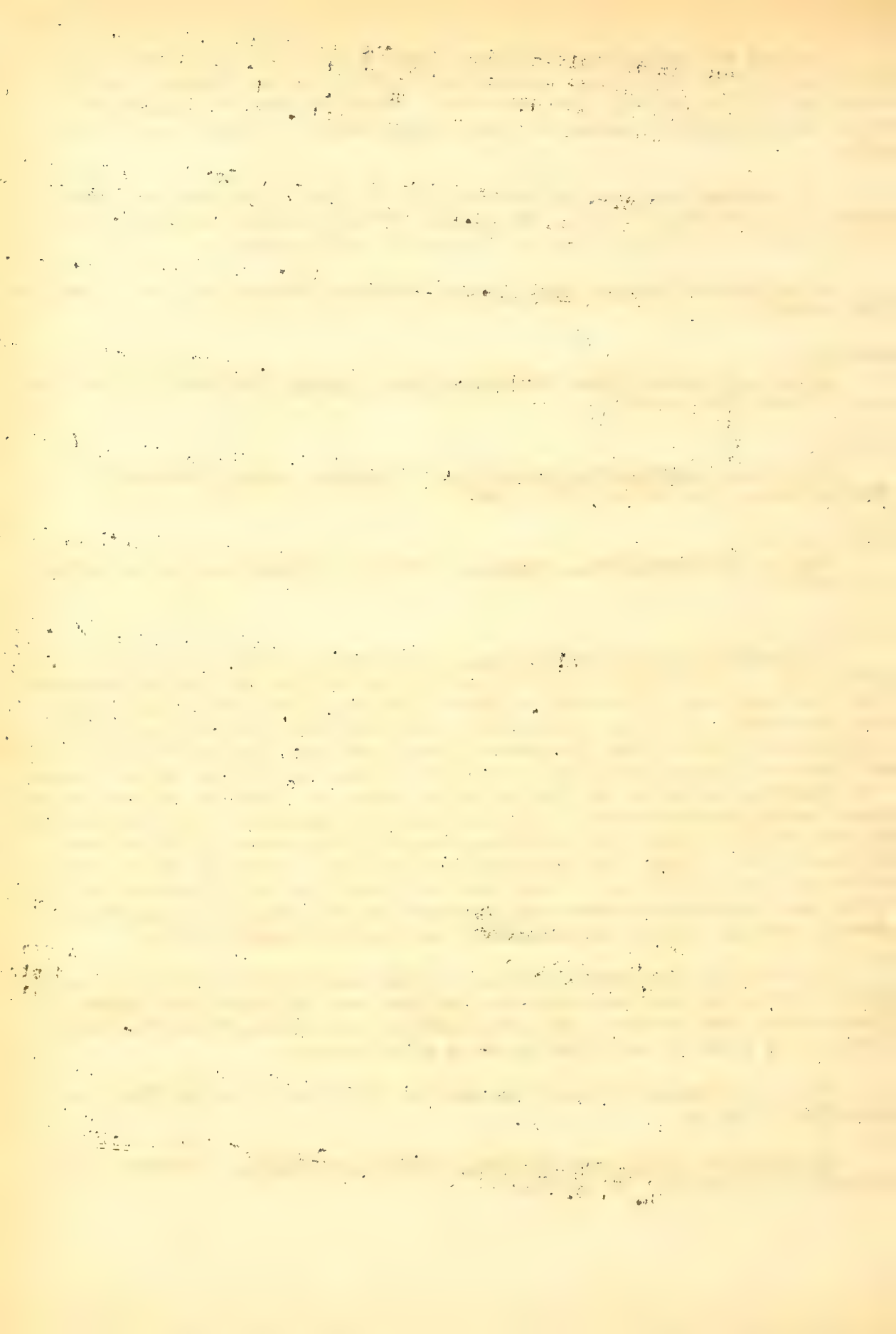
NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (T. E. Brentzel) (July 31) A field survey of flax near Fargo, in Cass and Richland counties, was made last week. The campaign for an increased flax acreage last spring was successful, there now being about 34,000 acres of flax in Cass County, approximately three times the acreage sown last year. Between 40 and 50 fields of flax were observed on a drive of about 50 miles south from Fargo. Weeds were numerous in nearly all fields but otherwise the flax was in fair condition generally both from the early and from late seeding. Wilt was observed in many of the fields, with infection ranging from a trace to 50 per cent; in many of the fields, with infection ranging from a trace to 50 per cent; while one large field was a total loss as a result of wilt. In some of the later sown fields heat canker had developed and was causing considerable damage, but the earlier sowings showed no signs of injury from it.

Flax rust is developing rapidly. On the experimental grounds at Fargo special attention has been given to flax sown near infected straw piles. Flax growing near infected straw was infected very early, while flax at a distance of a rod or so showed no signs of infection.

Dr. H. B. Humphrey visited the station July 4 and J. Allen Clark was here July 8 and 9.

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue) (No report)



Dickinson Substation, Dickinson (R. W. Smith) (July 31) Comparatively hot weather has prevailed during most of the month of July, causing rapid growth of cereal crops and early maturity of early varieties. Rains have been frequent, with a total of 4.67 inches for the month, which is about 2.50 inches above normal.

The weather has been especially favorable for corn, which promises to give the best crop in the history of the Substation if similar conditions continue to the end of the season.

Early varieties of wheat, oats, and barley were harvested some time ago and now the remaining barley and oat varieties are ripe, with the exception of White Russian oats. The common wheat varieties are nearly all ripe and durum varieties are partly ripe.

The abundant moisture and hot weather have combined to bring about an epidemic of stem rust, the worst at Dickinson since 1916. The later varieties of common wheat will be somewhat reduced in yield but the early varieties of common wheat and the durum varieties will not be much affected by the rust. Late sown wheat in the vicinity will be reduced in yield and injured in quality. Early sown Marquis wheat in this county is ripe, with very little evidence of rust injury.

The following men visited the Substation during the past two weeks: Dr. E. D. Ball, Dr. C. R. Ball, D. E. Stephens, J. A. Clark, T. R. Stanton, J. H. Martin, and A. C. Dillman. Director Trowbridge and Dean E. S. Keene of the Agricultural College were speakers at the Substation picnic July 20. Dr. H. L. Walster, agronomist at the Agricultural College, visited the Substation while on the way to the Bozeman meeting.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.)
August 3) During the last half of July there has been abundant rain which has been especially beneficial to corn and late crops in general.

White Smyrna barley, Sixty Day and Gopher oats, and Hard Federation and Quality wheats were harvested July 17. The harvesting of the barley varieties was completed July 23, of the oat varieties July 28, and of the wheat varieties August 1. Flax sown April 15 and May 1 in the date-of-seeding- and tillage experiment was harvested July 30. The mixtures of flax and wheat and flax and oats were harvested August 1.

Stem rust on wheat seems to be considerably worse than for a number of years, at least than in any year since 1916. Marquis wheat sown before the end of April, though rusted to some extent, has filled fairly well. Marquis wheat sown later is likely to be severely injured by rust.

Many official and other visitors have been at the station recently. Among the official visitors were Drs. E. D. Ball, and C. R. Ball July 20; Director Trowbridge of the North Dakota Agricultural College, July 21; T. E. Stea of the North Dakota Agricultural College, July 24; T. R. Stanton July 26; and D. E. Stephens July 29.

A. C. Dillman left July 22 with Dr. C. R. Ball, Dr. E. D. Ball, and Supt. J. M. Stephens to attend the agronomy meetings at Bozeman, Mont. J. T. Sarvis left July 25 to attend these meetings.

J. C. Brinsmade, Jr., visited the Dickinson Substation August 2.

J. Allen Clark arrived August 2 to supervise the harvesting of the Kota Hard Federation wheat hybrids.

Maximum temperature for last half of July, 97° July 8; minimum 55°, July 3; precipitation, 3.10 inches.

MONTANA

Judith Basin Substation, Moccasin (R. W. May) (July 31) As a result of the abundant and well distributed seasonal precipitation, all of the small grains are filling unusually well. Many of the forage crops will produce a second crop, which is the first time in several years that such a crop has been obtained.

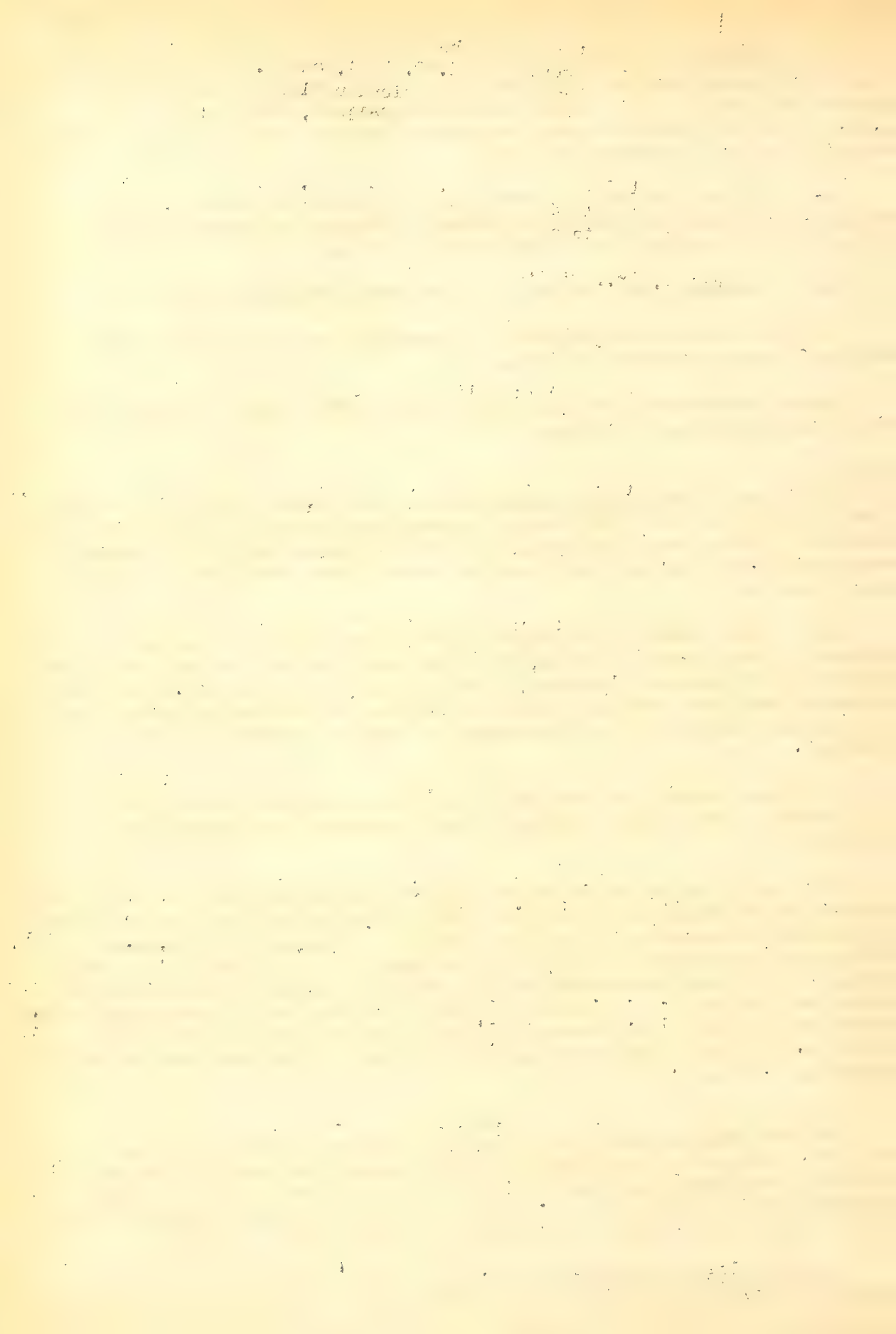
Most of the varieties of winter wheat and the spring grains are beginning to turn, while a few of the early varieties of oats and barley are almost ready to harvest. Eighteen of the earliest oats and barley varieties in nursery rows were harvested today (July 31). On the whole, harvest will be later than usual this year on account of frequent showers and cool weather.

The annual picnic was held July 24, with an attendance estimated at 2,000 people. Threatening weather no doubt prevented many others from attending.

During July the following persons visited the Substation: Dr. E. D. Ball, Director of Scientific Work; Dr. C. R. Ball, Cerealist in Charge of the Office of Cereal Investigations; Clyde Mc Kee and I. J. Jensen, of the Montana Agricultural Experiment Station; J. Allen Clark, A. C. Dillman, R. W. Smith, and G. A. Wiebe, representatives of the Office of Cereal Investigations at various points; Dr. H. L. Walster, agronomist of the North Dakota Agricultural Experiment Station; J. M. Stephens, of the Office of Dry Land Agriculture, Mandan, N. Dak., and Leroy Moomaw, superintendent of the Dickinson substation, Dickinson, N. Dak.

The precipitation during July was 3.20 inches, as compared to 1.92 inches, the average for the month during 25 years. The precipitation was well distributed throughout July. On the last day of the month 0.53 inch of precipitation was recorded. The total precipitation since January 1 has been 13.67 inches, of which 3.53 inches have fallen since April 1.

State College of Agriculture, Bozeman (Barberry Eradication, W. W. Christopher) (No report)



WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe) (No report)

Agricultural Experiment Station, Moscow (Stripe Rust Investigations, C.W. Hungerford) (No report)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (July 21) Weather conditions in eastern Oregon during June and early July were, on the whole, very favorable for cereals. The June precipitation was scant, the total being 0.61 inch, but the weather remained cool and cloudy until near the end of the month. A short period of hot weather occurred from June 28 to July 2. Nearly all winter wheats on the Station were ripe by July 5. On July 6 and 7 an unusual rainstorm of 1.28 inches occurred. This rainfall did some damage to ripened grain but was of considerable benefit to late winter wheat and to all spring grain. All winter wheats on the Station are now in the shock. Yields of winter wheat varieties are expected to range from 25 to 30 bushels per acre. The spring barley and oat varieties also have been cut and give promise of fair yields. Some of the early spring wheat varieties will be ready to harvest in three or four days.

Three fairly successful field days were held on the Station in June, one for Morrow County farmers on the 16th, one for Wasco County farmers on the 17th, and one for Sherman County farmers on the 23d. From fifty to eighty farmers were present on each of these three days.

Director J. T. Jardine and a committee of the Board of Regents inspected the Station on Friday, June 29.

B. B. Bayles, Junior Plant Breeder, who will assist in the cereal experiments, arrived on the Station June 29.

The following have been recent visitors to the Station:

W. M. Jardine, President of the Kansas State Agricultural College;
Dr. E. F. Gaines and C. E. Hill, of the Washington Experiment Station;
J. M. Raeder, of the Idaho Agricultural Experiment Station;
H. P. Barss of the Oregon Agricultural Experiment Station; and
Dr. H. B. Humphrey and J. E. Martin of the Office of Cereal Investigations.

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones) (August 1) The rice crop has improved materially during the past 10 days. Most of the forms of water grass are now heading, while some are fully headed. This makes the fields look ragged, but as soon as the rice starts to head much of the grass will be hidden by the rice and the appearance of the fields will be materially improved.

We have our share of water grass at the Station this year. It is plentiful on the plats on which the rice was irrigated up before submerging. On plats submerged immediately after the rice was sown broadcast there is little grass, except on one series which is badly infected with white water grass which apparently can not be suffocated with water.

We have had favorable weather for rice during the past 10 days. The maximum temperature for July was 110° F.; minimum temperature, 54° ; and the greatest daily range in temperature, 41° . The total evaporation for July was 8.866 inches.

University Farm, Davis (V. H. Florell) (No report)

Agricultural Experiment Station, Berkeley (F. N. Briggs) (No report)

CEREAL COURIER

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Personnel (August 11-20) and Field Station (August 1-15) Issue.

PERSONNEL ITEMS.

Dr. C. R. Ball, Cerealist in Charge, returned to Washington August 17. Continued rains in Indiana and Illinois have greatly delayed threshing and resulted in some spoilage of grain in the shock.

While at Madison, Wis., Doctor Ball visited the large area of escaped barberries at Black Earth to inspect the results of treatment with various chemicals, after which a trip was made by automobile to the similar but smaller area at Gurnee, Ill.

Cooperative research at all points is progressing most excellently. Many manuscripts are in preparation or in prospect and a number of workers are planning additional graduate study during the coming college year.

J. Allen Clark, agronomist in charge of western wheat investigations, returned to Washington August 15 after an absence of nearly two months. He first visited agricultural experiment stations in Kansas, stopping at Manhattan, Hays, and Colby, accompanied by John E. Parker and M. N. Pope. The wheat-breeding nursery and hard winter wheats in plots at Manhattan were badly lodged. The breeding of hard winter wheats for strength of straw, milling quality, and early maturity is the principal object of the Kansas work. Several very promising F₆ winter-habit strains of the Kanred-Marguis cross have been developed. For strength of straw and early maturity the Kanred-Hard Federation cross appeared very promising. At Hays and Colby winter wheat did not emerge until spring and the crop was late and poor. At Colby, Prelude spring wheat looked very good, except that it showed some stem-rust infection.

At Akron, Colo., winter and spring wheat was late. An early selection of Kanred made by F. A. Coffman appeared very promising as also an early selection of Arncliffe winter wheat. At the Cheyenne Experiment Farm, Archer, Wyo., spring seeding was late. The only winter wheat which survived was that sown with the furrow drill.

At North Platte, Nebr., future cooperative experiments with wheat and other small grains were planned with L. L. Zock, to be started at the North Platte Substation this fall and next spring. The next stop was at Lincoln, Nebr., where the wheat experiments conducted by T. A. Kiesselbach were inspected. At Ames, Ia., was seen a promising new winter wheat selected from Banat, recently named Iobred, which is being increased for commercial growing.

The cooperative rust-breeding experiments at University Farm, St. Paul, Minn., were carefully studied by Mr. Clark. Numerous promising strains of rust-resistant hybrid wheats were being tested for the first time in the agronomic nursery. Among the most promising hybrids are F₆ spring-habit strains of the Kanred-Marquis cross; F₄ Marquis x Kota; F₄ Marquis x Ruby; and F₇ Marquis x Tumbillo. While at Minneapolis Mr. Clark assisted in arranging for the milling of several car loads of Kota wheat by some of the leading milling companies of the city. This is the first test of the milling quality of this wheat on a commercial scale.

In North Dakota wheat breeding and varietal experiments were studied at Fargo, Mandan, and Dickinson. Several promising F₅ rust-resistant strains of the Marquis x Kota cross, developed by L. R. Waldron, are being tested for the first time in field plats at Fargo and Dickinson. At Mandan a large population of F₃ and F₄ material of the Kota-Hard Federation cross was studied for rust and drought resistance. At Dickinson the most promising hybrids were strains of Marquis x Kanred and Kota x Kanred. One F₆ strain of Marquis x Kanred (1713 B 8-11) which appears to be the most promising, is being increased for growing in field plats and is being further selected. Nodak, a rust-resistant durum wheat, developed at Dickinson, is being further increased at the Dickinson Substation this year.

In Montana wheat-breeding experiments were studied at Moccasin and Bozeman. At Moccasin extensive hybrid studies with winter wheat are being conducted for greater winter hardiness. More than 40 hybrid combinations of the most winter-hardy wheats are being grown in bulk, and several as pure lines. Among the most promising are crosses of Kanred x Beloglina-Buffum No. 17; Kanred x Minhardi; and Kanred x Minturki. At Moccasin an awnless hard red winter wheat (Kharkof x Newton, 166 B 1-6), the best of several hundred selections, is being tested for the first year in replicated plats. Karmont, a selection of Kharkof, first distributed last year, is being grown for increase on 40 acres. Important pure-line studies with Peliss and Red Bobs spring wheats are also being conducted. At Bozeman cooperative breeding experiments with Marquis x Hard Federation and Dicklow x Hard Federation have been started. F₂ material of both crosses was grown and studied this year to determine if there is any correlation between yield per plant and the length of the fruiting period. Inheritance of the curling leaf of Hard Federation also was studied.

At the Aberdeen (Idaho) Substation similar wheat breeding work is being conducted with Dicklow x Hard Federation and Dicklow x Federation. These and other experiments with wheat under irrigation were studied by Mr. Clark, who also inspected the wheat experiments of the main station at Moscow, Idaho.

In Washington State Mr. Clark inspected the cooperative experiments in breeding wheat for smut resistance conducted by E. F. Gaines. The so-called smut proof wheat developed by Professor Gaines from a cross between Turkey and Florence again proved very resistant and was being increased at the agricultural experiment station at Pullman. This variety has now been named Redit and seed will be distributed this fall to several farmers in one-pound

lots. Other smut-resistant and immune strains, particularly Martin, Husar, and Sacman, looked very promising from the standpoint of smut resistance and may prove adapted to other sections. The breeding work shows definite segregation for smut resistance and rapid progress has been made in recent years in breeding smut-resistant and immune wheats, not only in Washington but also in Oregon and California. While in Washington Mr. Clark inspected the wheat experiments on the Adams Branch Station at Lind, and made a trip by automobile with Superintendent M. A. McCall through a part of the Big Bend wheat district.

Dr. A. G. Johnson, pathologist in charge of investigations of diseases caused by imperfect and sac fungi, and C. W. Warburton, agronomist in charge of cereal agronomy investigations, left August 19 by automobile for La Fayette, Ind., and Urbana and Bloomington, Ill., where they will inspect the corn disease experiments conducted at these points in cooperation with the Purdue University and Illinois Agricultural experiment stations and Funk Bros. Seed Co., respectively. En route they will make observations on crop conditions, particularly with reference to corn diseases.

From Bloomington Doctor Johnson will continue by automobile to Madison, Wis., and will then visit the Minnesota and North Dakota agricultural experiment stations to inspect cooperative cereal disease experiments and confer with members of the Office staff and experiment station workers located at these points.

Mr. Warburton will go to Ames, Iowa, Lincoln, Nebr., Akron, Colo., and Hays and Manhattan, Kans., to inspect cooperative corn and grain-sorghum experiments and to confer with Station officials. At Akron it is expected that he will be joined by F. E. Richer, agronomist in charge of corn investigations, who will accompany him to several of the other stations.

From Manhattan Mr. Warburton will go to the Woodward Field Station, Woodward, Okla., to Sanilac and College Station, Texas, Crowley and Baton Rouge, La., and Knoxville, Tenn., returning to Washington about September 15.

Dr. F. E. Kempton, pathologist in charge of barberry eradication, who has been in the field since July 10, left Minneapolis July 30 by automobile, accompanied by Harrison Fuller, Secretary-Director of the Conference for the Prevention of Grain Rust, and Franklin M. Crosby, of the Washburn-Crosby Company, for an inspection of the barberry eradication in the Red River Valley. At Fargo, N. Dak., they were joined by G. C. Mayoue, L. W. Melander, and M. F. Thompson. Most of the wheat seen along the route was injured by rust.

Mr. Fuller accompanied Doctor Kempton to Glendive, Mont., where W. N. Christopher joined them. Wheat in this neighborhood was badly rusted. From Glendive to Forsyth very little rust was noticed. Between Forsyth and Roundup there was a high percentage of rust, while between Lewiston and Great Falls only traces were found. At Moccasin, on the Judith Basin Substation, a few pustules were found on Haynes Blue Stem. No rust was noticed on the route from Windham to Choteau.

A large number of escaped barberry bushes were found on the shore of Flathead Lake near Rollins. At Belton, also in Flathead County, half a day was spent scouting in the hills on horseback and examining grasses for traces of rust.

Earl F. Patsch was appointed August 1, as agent in the investigation of crown rust of oats conducted at Ames, Iowa, in cooperation with the Iowa Agricultural Experiment Station. In these investigations Mr. Patsch will succeed Irving W. Clodney, who has been appointed collaborator.

E. B. Stanton, geneticist in charge of barley investigations, writes from Aberdeen, Idaho, under date of August 10 that he has never seen better oats than were then being harvested on the Aberdeen Substation. He estimates that some of the varieties in the plots will yield at least 150 bushels to the acre. Earlier seeding than usual has resulted in bringing out varietal differences, such as time of ripening, which sometimes have been obscured at the Aberdeen Substation. The extensive cereal nurseries at Aberdeen are in excellent condition.

Mr. Stanton expected to leave the Aberdeen Substation about August 17 on the return trip to Washington, stopping en route at Akron, Colo., and Manhattan, Kans., and for a short leave of absence at his old home at Grantsville, Md. He expects to reach Washington the last week of August.

Mrs. Burnie D. Summers was appointed clerk, effective August 16, to fill the vacancy caused by the resignation of Miss Ella W. Stevens.

MANUSCRIPTS AND PUBLICATIONS

Page proof of Department Bulletin 1175, entitled "Grain Sorghum Experiments at the Woodward Field Station in Oklahoma" by John B. Sieglinger was read August 16.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs) (No report)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor) (No report)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love)
(No report)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (No report)

Agricultural Experiment Station, Baton Rouge (H. Stoneberg) (No report)

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (No report)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (Aug. 13)

C. H. Kyle inspected the cooperative corn experiments July 19 and 20. A few later they were considerably injured as the result of a severe storm accompanied by high wind and hail. Much of the standing corn, especially that planted early, was blown down and torn by the hail. On July 26 we began haggling and pollinating in the corn-breeding ranges and have been hard at it every day since. I expect to finish in about another week. Except for a somewhat heavier infestation of lice and ear worms than usual the corn ranges are looking and promising well.

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins) (No report)

Agricultural Experiment Station, Ames (Investigation of Crown Rust of Oats, S. M. Dietz) (No report)

Iowa State College, Ames (Barberry Eradication, J. H. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (No report)

Post Office Building, Urbana (Barberry Eradication, G. C. Curran) (July report) The month of July marked the beginning of the most extensive and intensive campaign that has ever been conducted against the common barberry in Illinois. At this time a large number of State and Federal men began work. To most of them chemical eradication was an entirely new feature, and in order to familiarize every field man with the methods a conference was held at Joliet July 2 and 3 at which about 50 men were present. The first day was devoted to

demonstrations by Noel F. Thompson. On the second day attention was given to various other important phases of eradication. In the evening talks were given by Harrison Fuller, Director of the Conference for the Prevention of Grain Rust, O. T. Olsen, superintendent of the Bureau of Plant Industry, Illinois State Department of Agriculture, and J. J. Christensen, field assistant in epidemiology studies.

On July 5, 51 men began an original farm-to-farm survey in 10 counties. The counties of Rock Island, Henry, Bureau, La Salle, Lee, Will, and Cook were under the direction of the Federal forces with State Leader G. C. Curran in charge. Ford, Livingston, and Kankakee counties are being covered by State men under the direction of P. A. Glenn, chief inspector, Illinois State Department of Agriculture. In addition to the original survey two men continued the re-survey work in Boone and McHenry counties.

During the month of July an average of one-third of the total area of these counties was covered in an original survey. Every effort is being made to find all bushes. In some of the counties woodland predominates necessitating considerable foot scouting. Escaped areas with wide variation in the number of bushes have been found in all but one county. Rock Island County bordering for 20 miles on the Mississippi River contains many escaped bushes along the river bluffs. In La Salle County several thousand escaped seedlings and bushes were found along the rivers and streams. The survey in Kankakee County also revealed the presence of more than a thousand escaped bushes. Almost without exception the original source from which the escapes started has been found within a few miles from the farthest bush.

Chemicals are being used to destroy a large percentage of the bushes found. Very little opposition to the use of chemicals from the property owners is encountered. Salt seems to be best adapted in most cases and is being used more generally than sodium arsenite. The scouts all report favorably on the destructive effect of the chemicals on the bushes. About 12,000 pounds of salt and 200 gallons of sodium arsenite solution are reported to have been used during the month of July. Wherever they found it impracticable to use chemicals the scouts dug the bushes when the number was not too great and supervised the removal of larger plantings to insure complete destruction of all the roots.

A general light epidemic of stem rust on wheat was reported from every section in which the scouts are working, with no damage resulting. Barberries in most cases were not heavily rusted and often entirely free from rust. On July 5 rust was found on barberries in Montgomery County. This is the farthest county in Illinois that barberries have ever been found rusted. At this time rust had spread from the bushes to Agrostis alba for a distance of several rods.

Interesting accounts of the spread of crown rust on oats from nearby Rhamnus came to the office from a number of counties. In Boone County, E. D. Griffin reports a total loss of oats within a 40-rod radius of a buckthorn hedge. O. A. Plunkett and O. B. Young report similar observations in Bureau County. In many places the farmers mistake Rhamnus for barberry because of the loss from what they supposed was black stem rust.

A new feature of the campaign in Illinois is the use of one man to carry on a publicity campaign in connection with the eradication work. E. D. Griffin, who is cooperating with the Conference for the Prevention of Grain Rust, devoted his time to taking care of the publicity and educational needs in the area where eradication work is in progress.

Everywhere there is splendid cooperation by the public. Once the people understand what it is desired to do they are willing to put forth every effort to help.

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer) (No report)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (August 13) Leaf rust of wheat, *Puccinia triticina*, has been less severe this season than in the previous two years. Although wheat varieties were late in maturing and the season has been very favorable for the disease, leaf rust was late in developing. In the middle of May very little rust was noted in Tennessee, Kentucky, and Indiana. However, by June 11 susceptible varieties at Knoxville, Tenn., showed an infection of 100 per cent at which time certain varieties were beginning to ripen. At this time only a slight attack of leaf rust was noted in the plats at La Fayette, Ind., Madison, Wis., and St. Paul, Minn., all show a heavy infection on susceptible varieties just before ripening. In most of these places the rust evidently reached its maximum intensity only a short time before harvest. Consequently the loss from it is much less this year than usual. Apparently this is due in part to the more or less open winter characterized by such extreme fluctuations in temperature as to reduce very materially the amount of surviving leaf rust on wheat in the central portion of the eastern United States.

Varieties at Washington, D. C., Knoxville, Tenn., Experiment, Ga., La Fayette, Ind., and Madison, Wis., showed considerable variation as to susceptibility. As a group, the durums and emmers showed outstanding resistance to leaf rust. Among the bread wheats, Kanred, several strains of Turkey, and Beloglina were fairly resistant. Malakoff (C. I. No. 4898), Imperial Amber (C. I. No. 4860), Democrat (C. I. No. 3384), Norka (C. I. No. 4377), and several unnamed spring wheats showed high resistance in some plantings and considerable susceptibility in others, apparently correlating with the distribution of the strains of leaf rust.

With Dr. C. E. Leighty, studies were made at Washington, D. C., Knoxville, Tenn., and La Fayette, Ind., and with R. P. Bledsoe at Experiment, Ga., of selections from Doctor Leighty's hybrids obtained by crossing Valley, Poole, Prelude, Leap, Purplestraw, Virginia, Genesee Giant, Treasure, Mealy, Gold Coin, Gypsy, China, Early Ripe, Fultzo-Mediterranean, Gladden, Nigger, Grand Prize, Rising Sun, Fulcaster, Jones Fife, Penquite, Mediterranean, Jersey Fultz, and New Amber Longberry on Kanred, P 1066, and P 1068. Many apparently were still segregating. Some apparently were uniform for resistance, being even more resistant than Kanred, and showing combination with desired agronomic characters.

A trip to Madison, Wis., St. Paul, Minn., Ames, Iowa, and Manhattan, Kans., has afforded a much better understanding of the rust situation in these States and of the methods employed in the various lines of rust investigation. At Manhattan, Kans., the results obtained by G. O. Johnston in his leaf-rust investigations were discussed and arrangements made for correlation with the work farther east.

Leroy Compton, with the assistance of E. D. Koehler, a junior student from the College of Agriculture, has been engaged since July 19 in making selfs in various lines of sweet and dent corns which showed resistance to rust in greenhouse tests last winter, and in a number of hybrids of pop and dent corns received from Dr. R. A. Emerson of Cornell University. These hybrids will be used for studies of inheritance of rust resistance. As yet rust has not developed in the field sufficiently to provide opportunity for accurate notes. If sufficient rust develops study also will be made of the various lines of sweet and field corns being grown in root-rot plats at Dayton, Ind.

Harvesting of wheat varieties and hybrids and rye selections was finished here about July 15, and threshing of this material is now being pushed as rapidly as possible. Some additional help is being hired temporarily for the hand threshing of hybrid F₂ material and F₃ selections.

College of Agriculture, Purdue University, La Fayette (Barberry Eradication, E. E. Boston) (August 14) Seven counties were surveyed in July, and a resurvey was conducted in other counties, including several in which rust was especially severe last year. No rust has been found in areas in Rush, Decatur, and Johnson counties formerly subject to rust, but in other counties where sprouts were present rust has been found. No outstanding cases of infection in the immediate vicinity of the bushes which were removed last year has been found this season. Several heavy infections have been found, however, near bushes located this spring. There has been a general light rust infection in a number of counties but very little damage has been done.

One farmer said that for the first time since 1882 he has grown wheat free from rust. Last year a planting of barberries was removed from a property adjoining his farm.

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, J. W. Baringer) (No report)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) (July report) Twenty-eight field assistants began work July 2. In addition, Paul Tilford was employed as publicity man and Dr. H. M. Jennison was stationed in the field to map escaped areas.

Six assistants were assigned for survey work in Shiawassee County, 2 in Genesee County, 6 in Lapeer County and 2 in Saint Clair Counties. Five counties were covered in the farm-to-farm survey in the month of July.

We have mailed 18,000 form letters in these counties together with the "Farmer Brown" folders furnished by the Conference for the Prevention of Rust.

Some very interesting escaped areas were found in Genesee and Lapeer Counties. In the former an escaped area was attacked by the wheat strain of the rust. Certifications were obtained from the neighboring farmers concerning their observations of the spread of rust in their wheat fields. In Lapeer County the oat strain was more prevalent.

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab Investigations, J. G. Dickson) (No report)

Agricultural Experiment Station, Madison (Wheat Rosette and Take-All Investigations, H. H. McKinney) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker) (No report)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (No report)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger) (August 15) The last beneficial rain fell in this vicinity occurred June 19. After that date several light showers were recorded, but so far in August there has been no precipitation.

Quite a number of the sorghum varieties are heading and some of the earlier maturing varieties of both sorghums and broomcorn will make a yield in spite of the drought. Bagging seed heads and making some controlled sorghum crosses have been the main work on the Cereal Project.

On August 13 the writer visited Arnett, Okla., about 50 miles southwest of Woodward. Conditions are about the same all the way. Rain is required to make kafir or milo crop and unless it comes soon the crops will be gone. In one field of broomcorn that had headed and was being harvested on the 13th, the crop looked much better than one would expect. On the route to Arnett and back we missed the main broomcorn territory. Around Arnett there is quite a wheat territory and much land has been plowed dry for another wheat crop.

Maximum temperature to date, 107°, August 14; minimum 67°, August 10. The maximum temperature has been 100° or higher on all but 3 days of the first half of the month.

KANSAS

Agricultural Experiment Station, Manhattan (J. H. Parker) (No report)

Hays Branch Experiment Station, Hays (A. F. Swanson) (August 15) Local showers have been frequent in the last 15 days, the total precipitation being about 2.5 inches. Sorghum and feed crops have been greatly benefited by these showers.

On several occasions the temperature has been above 100°F. Fortunately it was not accompanied by hot drying winds.

Most of the sorghums have passed or are now in the heading stage. About 2,000 heads have been bagged. This is our busy season in making individual plant studies.

The July drought, in addition to the hail and grasshopper damage, has completely ruined all corn prospects on the Cereal project. Grasshoppers are so numerous this year that but little headway has been made against them with poisoned bran mash.

Silo filling will begin in about 10 days. Farmers are now busy preparing ground for wheat.

COLORADO

Akron Field Station, Akron (F. A. Coffman) (Aug. 15) For the first half of August the weather was comparatively warm and dry. Practically no rain fell in this section of the State during the period. As a result the delayed harvest was completed without damage from storms. This was very different from last year when many farmers lost their winter wheat by hail. Two showers of about one-fourth inch each at the middle of the month relieved the situation somewhat for the corn, which had begun to need moisture.

Winter wheat in this section produced a very "spotted" crop. In some fields fair yields were obtained, but for the most part they will hardly pay harvesting expenses. One farmer is reputed to have given away some 200 acres of his wheat rather than go to the trouble of harvesting it. Another sold his for one dollar an acre. With a light crop and at the present low price the farmer who gave his wheat away probably was money ahead of some who went to the trouble of harvesting their crop.

Prospects for corn and sorghum are favorable at this time although a good rain is needed to insure the corn crop. Most of the corn in this section is now in the milk stage. A few fields are in roasting ear and some are a trifle more advanced.

Satisfactory progress has been made in the Office projects during the past two weeks. Harvest of the field plats and nursery rows was completed early in the month. The nursery has been threshed. It was an unusually large job this year at the Station as about 4,000 rod rows were threshed. Threshing of the field plats is progressing rapidly. All of the oat and barley plats have been threshed. Spring wheat possibly will be threshed before the end of the present week.

Some very good yields of oats and barley were obtained this season. Several of the oat varieties yielded more than 50 bushels to the acre on fallow. The better yielding plats of barley produced yields close to 40 or 45 bushels to the acre. The highest yielding oat variety this season was a selection from Burt made at the Station in 1919. The Akron selection from Burt made in 1906 by Wilson G. Shelley yielded exceptionally well this season. Both of these strains of Burt outyielded Kanota and Fulghum.

Corn selfing work has been completed. Toward the end of the season it was difficult to get the stalks to produce pollen where silks were produced or to produce silks on some stalks which produced pollen. Slightly less than 5,000 stalks were bagged this season.

Some work has been done in attempting to breed sorghum by the approved methods. Possibly 600 to 750 heads were bagged. Unfortunately, however, the grasshoppers have taken an exceptional liking for these bags and few remain which have not been eaten full of holes.

Agricultural College, Fort Collins (Barberry Eradication, E. A. Lungren)
(No report)

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel) (No report)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, R. U. Cotter) (No report)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, L. D. Hutton)
(No report)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)
(No report)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue) (No report)

Dickinson Substation, Dickinson (R. W. Smith) (August 15) The harvesting of the cereal plats at the Substation is completed with the exception of the last two seedings of the date-of-seeding experiment with flax. The cereal nursery is harvested except a few hold rows and a few late varieties. Threshing will begin this week if weather permits.

The weather has been comparatively cool this month with frequent light showers but with a total of only 0.24 inch of precipitation.

Considerable stem rust is reported in the spring wheat in Stark and adjoining counties. The yield of late-sown grain will be considerably reduced and the quality injured.

Harvest in this vicinity is nearly finished and thrashing is just begun.

John H. Martin has finished harvesting his winter-wheat hybrids and has begun thrashing them.

J. H. Stephens, of the Office of Dry Land Agriculture, Mandan, N. Dak., visited the Substation August 10. M. N. Levine, of University Farm, St. Paul, Minn., took notes on the rust nursery August 11.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.)
(August 16) The first half of August has been generally cool and cloudy but with very little rain.

The flax varietal plats were harvested August 6, and flax sown May 15 in the date-of-seeding-and-tillage experiment was harvested August 11. Three plats of commercial Argentine flax, and flax plats sown June 1 and June 15 in the date-of-seeding-and-tillage experiment are the only Cereal Investigation plats that remain to be harvested.

About half of the rows in the flax-sick-soil nursery were harvested August 14 and 15. The remainder are ripening very slowly on account of the cool cloudy weather and probably will not be ready to harvest for some time.

J. Allen Clark arrived August 2 to take notes on the Kota-Hard Federation wheat hybrids and left on the 7th.

A. C. Dillman returned to Mandan August 4.

M. N. Levine of Manhattan Kans., was here August 10 to take rust notes on the uniform biologic form rust nursery.

A. W. Henry, agent in the cooperative rust epidemiology studies who is working on cereal diseases at University Farm, St. Paul, Minn., was here August 15 taking notes on flax rust which has been unusually plentiful this season.

Maximum temperature for the period was 85°, August 10; minimum 45°, August 2; precipitation 0.62 in.

MONTANA

Judith Basin Substation, Hecacasin (R. W. May) (August 15) Frequent showers and cool weather have delayed ripening of grain. Harvest is just starting while it ordinarily begins during the latter part of July. Grain will be of unusually good quality this year and yields much above the average.

There is considerable stinking smut in winter wheat this season and some infection in extremely early sown fields of spring wheat.

On the Substation the earlier varieties of oats and all varieties of barley have been harvested. The remaining oat varieties and some of the earlier wheat varieties will be harvested before the end of the week. Nursery harvesting is well under way.

The minimum temperature for the past two weeks was 39° on the 1st, maximum 90° on the 15th.

The precipitation for the first 15 days of August was 1.79 inches, while the average for 25 years for the whole month of August is 1.41 inches.

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Abundant Sabatashan, Abundant (G. A. Wiebe) (No report)

Agricultural Experiment Station, Moscow (Stripe Rust Investigations, C. W. Hungerford) (No report)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (No report)

CALIFORNIA

Piggs Rice Field Station, Piggs (J. W. Jones) (August 15) The weather was too cool for maximum rice growth during the first half of August. The rice crop this year is lacking in vigor and growth, no doubt because of the cool summer weather. For this reason yields probably will be lower than normal. More than the usual number of young cattails are appearing on commercial fields this year.

At the Station the rice varies in growth from very poor to good. In the field plats and the nursery a few of the earliest varieties are now fully headed and others are heading.

On August 13 I attended the Farm Center meeting at Richvale and briefly summarized the results obtained at the Station and outlined the work that is now being conducted.

University Farm, Davis (V. H. Florell) (No report)

Agricultural Experiment Station, Berkeley (F. M. Briggs) (No report)

CEREAL COURIER

Official Messenger of the Office of Cereal Investigations.
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15

August 31, 1923.

No. 21

Personnel (August 21-31) and Progress Issue.

PERSONNEL ITEMS.

Charles E. Chambliss, agronomist in charge of rice investigations, left August 30 for points in Minnesota and Wisconsin to study wild rice. He will collect specimens for botanical purposes, and also seed. The latter will be sown at Arlington Experiment Farm, near Washington, D. C., for botanical and genetic studies. He also will take photographs and study the methods used by the Indians in harvesting wild rice for seed and for food. An inspection will be made of growing plants of the southern species, Zizania palustris, which are being grown for this Office at St. Paul, Minn., and Oshkosh, Wis.

Before his return to Washington about October 15, Mr. Chambliss will study the rice experiments, at the Rice Experiment Station, Crowley, La., as well as the experiments, under irrigation, conducted by individuals at different points in the same State. He also will inspect the experiments conducted by cooperators in Alabama, Georgia, Florida, and South Carolina, who are growing rice without irrigation.

Frank Frolik, field assistant in the rust epidemiology studies conducted at University Farm, St. Paul, Minn., in cooperation with the Minnesota Agricultural Experiment Station, resigned August 31, having completed the work for which he was appointed.

H. S. Garrison, assistant agronomist in corn investigations, left August 22 to confer with officials of agricultural experiment stations at Ithaca, N. Y., Newark, Del., and La Fayette, Ind., concerning corn experiments.

Dr. Harry V. Harlan, agronomist in charge of barley investigations, left Bombay, India, about July 20 for Paris, France, where he is making arrangements for his further travel in Abyssinia. A cablegram has just been received from him at Pornic, France.

Dr. G. N. Hoffer, pathologist in charge of the investigation of roset, stalk, and ear rots of corn, in cooperation with the Purdue University Agricultural Experiment Station at La Fayette, Ind., was in Washington August 27 and 28 to study the physical and chemical condition of the corn in the experiments at Arlington Experiment Farm. Accompanied by Dr. H. B. Humphrey, pathologist in charge of cereal disease investigations, Doctor Hoffer left August 28 for Kingston, R. I., where, on invitation from Director B. L. Hartwell, of the Rhode Island Agricultural Experiment Station, he studied the relation of

acid soils and of fertilizer experiments to the chemical and physical condition of corn on that Station. On the return trip the Connecticut State Agricultural Experiment Station at New Haven and the Massachusetts Agricultural Experiment Station at Amherst were visited for the same purpose. At Yonkers, N. Y., Doctors Hoffer and Huxley conferred with officials of the Thompson Institute for Plant Research.

While in Washington Doctor Hoffer presented an outline of the problems and the results to date before the Farm Hands Club.

Dr. C. E. Leighty, agronomist in charge of eastern wheat investigations, is expected to return to Washington from the Middle West September 1 and will be Acting Cerealist in Charge during the two weeks' absence of Doctor Ball on vacation.

Walter C. Leth was appointed field assistant, effective August 1, to assist C. W. Hangerford in the investigations with stripe rust conducted at Moscow, Idaho, in cooperation with the Idaho Agricultural Experiment Station.

Dr. H. H. Love, of the department of plant breeding at Cornell University Agricultural Experiment Station, Ithaca, N. Y., and collaborator with this Office, called at the Office recently while passing through Washington on an automobile trip.

John H. Martin, agronomist in western wheat investigations, arrived at Moccasin, Mont., August 24 to spend four or five days in recording data on the wheat nursery at the Judith Basin Substation. He then expected to be at Dickinson, N. Dak., for two or three days, leaving via Fargo, N. Dak., for University Farm, St. Paul, Minn., where he will arrive September 5 to consult with Olaf S. Amundt, pathologist in charge of cooperative wheat breeding investigations.

Jerome P. Seaton, field assistant in cereal investigations at Arlington Experiment Farm for the past two months resigned August 25 to return to his position as instructor at Purdue University, La Fayette, Ind.

T. R. Stanton, agronomist in charge of oat investigations, returned to Washington August 29 after an absence of nearly two months. He visited agricultural experiment stations in Ohio, Indiana, Illinois, Iowa, Minnesota, North Dakota, Montana, Idaho, Colorado, and Kansas, and reports that in general crops are in good condition. Most of Mr. Stanton's time was spent in studying and recording data on the extensive breeding and identification nurseries of oats at Ames, Ia., Dickinson, N. Dak., and Aberdeen, Idaho.

At Ames it was not possible to make any definite observations on the approximately 500 hybrid strains growing in red rows because of lodging. This lodging is attributed to the location of the nursery on land which has been under cultivation only a few years and is still too high in nitrogen for best results with oats. About 500 of these hybrid strains represented selections from 12 different crosses mostly between Byzantina (sterilis)

and Sativa forms obtained from the Cornell University Agricultural Experiment Station last spring and grown for the first time at Ames. All these selections were harvested and yield data will be recorded. It is planned to distribute a number of the most promising to other experiment stations next year.

At Dickinson, N. Dak., the oat varieties in the classification nursery were in excellent condition for study except for a little lodging in a few rows. However, on the whole the experiments were very satisfactory and valuable data were recorded.

The period between August 4 and 19 was spent at the Aberdeen Substation, Aberdeen, Idaho, in studying and recording data on the oat classification and extensive breeding nurseries. For the first time false wild oats were found in the Swedish Select variety. They occurred in the progeny of a single plant. Some of the selections from crosses between Sixty-Day and Swedish Select, Sixty-Day and Clydesdale, etc., looked unusually fine as did a few of the new varieties obtained from Finland in the spring of 1922. One of these C. I. No. 2802, received under the name of "Esa," appeared to be identical with Golden Rain except that the kernel was white. This should be a most promising new variety if in addition it possesses the high-yielding power of the Golden Rain. Idahone, first distributed a few years ago from the Aberdeen Substation, continues in favor on the farms of southern Idaho.

Two days were spent at the Akron Field Station assisting F. A. Coffman in counting and selecting the black-kernelled plants from the progenies of nursery rows included in the experiment to determine the percentage of natural cross fertilization in oats. Progenies from the black-kernelled plants will be grown in the greenhouse at Arlington Experiment Farm, Virginia, during the coming winter.

At Manhattan, Kans., Mr. Stanton was told that the Kanota oat had more than maintained its reputation in Kansas during the past season. This variety seems to have found a definite place in the agriculture of the State as an early high-yielding oat.

The appointment of Bruce Vazouille, field assistant in the cooperative cereal investigations at University Farm, Davis, Calif., since June 7, was terminated August 11.

C. W. Warrenton, agronomist in charge of cereal agronomy investigations, writes from Independence, Iowa, August 27 of interesting agricultural conditions seen during the week's automobile trip from Washington, D. C., to Illinois. Except for one day the weather was perfect, and most of the roads were in good condition.

In western Maryland the oat harvest had not yet been finished, about one-third of the fields being uncut. Threshing was still in progress in Ohio, Indiana, and Illinois. Yields of small grain, particularly winter wheat, are unusually high, much higher than predicted before harvest. Corn generally is in excellent condition, though blown down quite a bit by storms. It is hardly as far advanced as usual, because of cool weather. With an ordinary season, however, most of it should mature without damage from frost.

On August 27 Doctor Johnson and Mr. Warburton arrived at La Fayette, Ind., where the afternoon and evening were spent in conferences with Messrs. Heifer, Duddleston, Trost, and Hains. In the course of the next two days similar conferences were held with cooperating officials of the Illinois Agricultural Experiment Station at Urbana, and the Funk Bros. Seed Co., at Bloomington, Ill.

At Rockford, Ill., Mr. Warburton left Doctor Johnson and the automobile and traveled by train to Iowa. At Independence it was raining steadily, and prospects were not bright for the Iowa State Fair then in progress. After conferring with officials of the Iowa Agricultural Experiment Station, Mr. Warburton expected to meet F. D. Richey, M. T. Jenkins, and A. A. Bryan at Manhattan, Kans., early in September for consultation on corn problems.

MANUSCRIPTS AND PUBLICATIONS.

MANUSCRIPTS SUBMITTED.

A paper entitled "Defective Seeds in Urtica: An Old Character," by Frederick D. Richey, was approved August 23 for publication in the Journal of Heredity.

An article entitled "Anchorage and Extent of Corn Root Systems," by James R. Holbert and Benjamin Kochler, was submitted August 24 for publication in the Journal of Agricultural Research.

A manuscript entitled "Experiments with Cereals at the Akron Field Station in Colorado," by F. A. Coffman, was submitted August 31 for publication as a Department Bulletin.

A manuscript entitled "Sorghum Smuts and Varietal Resistance in Sorghums," by Leo E. Melchers and George M. Reed, was submitted August 31 for publication in the Departmental Bulletin series.

PROOF

Page proof of Department Bulletin 1173, entitled "Experiments in Wheat Production on the Dry Lands of the Western United States," by David E. Stephens, Max A. McCall, and Aaron F. Bracken, was read August 24.

Page proof of article entitled "Resistance in Rye to Leaf Rust, Puccinia dispersa Erikss.," by E. B. Mains and C. E. Leighty, for publication in the Journal of Agricultural Research, was read August 28.

Page proof of Farmers' Bulletin 1306, "Growing of Rye in the Western Half of the United States," by John H. Martin and Ralph W. Smith, was read August 29.

PUBLICATIONS.

The Inheritance of Growth Habit and Resistance to Stem Rust in a Cross between Two Varieties of Common Wheat, by Olaf S. Aarnedt. In Jour. Agr. Research, v. 24, no. 6, p. 457-469, 2 pl., 1 fig. May 12, 1923. (In cooperation with Minnesota Agricultural Experiment Station)

A Statistical Study of the Comparative Morphology of Biologic Forms of Puccinia graminis, by M. H. Levine. In Jour. Agr. Research, v. 24, no. 7, p. 559-567, 2 pl., 14 fig. May 19, 1923. (In cooperation with Minnesota Agricultural Experiment Station).

Relation of Certain Soil Factors to the Infection of Oats by Loose Smut, by Lucille K. Bartholomew and Edith Seymour Jones. In Jour. Agr. Research, v. 24, no. 7, p. 589-595, 2 fig. May 19, 1925. (In cooperation with Wisconsin Agricultural Experiment Station)

Influence of Temperature, Moisture, and Oxygen on the Spore Germination of Ustilago avenae, by Edith Seymour Jones. In Jour. Agr. Research, v. 24, no. 7, p. 577-591, 3 fig. May 19, 1925. (In cooperation with Wisconsin Agricultural Experiment Station)

Influence of Temperature on the Spore Germination of Ustilago zea, by Edith Seymour Jones. In Jour. Agr. Research, v. 24, no. 7, p. 593-597, 1 fig. May 19, 1925. (In cooperation with Wisconsin Agricultural Experiment Stations)

Spores in the Upper Air, by Elvin C. Stakman, Arthur W. Henry, Gordon C. Curran, and Warren N. Christopher. In Jour. Agr. Research, v. 24, no. 7, p. 899-905, 2 pl. May 19, 1925. (In cooperation with Minnesota Agricultural Experiment Station)

Studies on the Life History of Stripe Rust, Puccinia glumarum (Schm.) Erikss. and Henn., by Charles W. Hungerford. In Jour. Agr. Research, v. 24, no. 7, p. 607-620, 4 pl., 1 fig. May 19, 1925. (In cooperation with Oregon and Idaho Agricultural Experiment Stations)

The Accumulation of Iron and Aluminium Compounds in Corn Plants and its Probable Relation to Root Rots. II, by G. N. Hoffer and J. F. Trost. In Jour. Amer. Soc. Agron., v. 15, no. 3, p. 323-331. August, 1923. (In cooperation with the Purdue University Agricultural Experiment Station)

Early Requests for Approval Desired.

August 31, 1925.

To the Staff of Cereal Investigations:

The new college year, 1925-1926, is about to open, and I am sure that all the scientific employees of the Office of Cereal Investigations are considering what studies they can undertake which will better equip them for the lines of research on which they are engaged. A splendid record was made last year when 66 took up post graduate study, including two who already had the doctor's degree. As a result several master's degrees and at least one doctor's were obtained by our workers and many credits established toward degrees to be obtained in future. The best and most important part of the work, however, is the added ability to prosecute research rapidly and effectively. The number engaged in graduate study last year was an increase of nearly 35 per cent over the year before, and it is quite possible that a further increase will occur this year.

Each employee is requested to consider studies he wishes to undertake during the coming school year and to make application for approval at the earliest convenient date. It is appreciated that many can not begin work until the second quarter or semester and that their applications necessarily may be delayed for weeks or even months until the courses to be given and the possibility of undertaking them are better known. On the other hand, all those who expect to begin work at the beginning of the college year should make their application promptly.

If the studies to be taken can be outlined at this time only for the first quarter or semester, make the application for the year, if it is expected to continue some study through the year, but submit the data for the shorter period. The outline for later quarters or semesters can be submitted when the facts are known and will not require a new approval unless the schedule and time period required is considerably different.

Among the data desired for use in connection with obtaining the approval of Bureau and Department officers are the following:

1. The degree toward which the applicant is working.
2. Each course of study with the name of the professor by whom given and the particular phase, if any, which the applicant desires to pursue.
3. The number of credit hours which each subject represents.
4. The time required for each subject, showing the number of days per week, the number of hours per day for class and laboratory, and, where possible, the actual hours of the day between which the work is taken. (This last is in order that it may be known whether the work occurs during or outside of official hours).
5. The thesis subject, with a definite statement as to whether it represents wholly or partly the official Departmental research of the applicant.

6. Carbon copies of the applications received last year, as written in this Office for reference to the Bureau and Department, were returned to many of the applicants, and the same general style should be followed as it will simplify the editing and rewriting in multuplicate here.

The splendid record made by the employees of this Office in graduate study is a source of gratification to the Bureau and Department officers and has been referred to by both on many occasions. It is in line with the spirit and intent of the Department to become a research institution of the highest and broadest type possible. Every proper encouragement will be given to all employees in better fitting themselves for the tasks which lie ahead.

Yours for Better Training

C. R. Ball

Cerealist in Charge.

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PROJECT REPORTS

CEREAL DISEASE INVESTIGATIONS, Dr. H. B. Humphrey, Pathologist in Charge

Smut Investigations, Dr. W. H. Tisdale, Pathologist in Charge.

Report of Seed Treatment Experiments for the Control of Smuts
in Wheat, Barley, and Oats in 1923.

By W. H. Tisdale, J. W. Taylor, and R. W. Leukel.

Bunt of Wheat.

The seed treatments for the control of bunt were not so satisfactory this year as last because of the low percentages of bunt in the check plats. In the red-row series, where a large number of compounds were used, no bunt developed even in the check rows. Germination records were obtained, however. Table 1 gives the average percentages of germination, average yields, and average percentages of bunt in the 40th-acre plats. Purple Straw wheat was used in this experiment.

Table 1—Effects of various seed treatments on germination, bunt control, and yields of Purple Straw wheat sown in 40th-acre plats on Arlington Experiment Farm, Virginia, October 13, 1922.

Plats	Treatment	: Average : :field : germination	: Average : yield bu.: per acre.	: Average : percentage : bunt.
1 and 5	: Check	: 57.0	: 23.9 -	: 0.80
2 and 9	: Seed-O-San	: 65.0	: 32.9 -	: 0.00
3 and 10	: Chlorophol 0.3 per cent, 1 hr.	: 65.0	: 34.5 -	: 0.00
4 and 12	: Copper carbonate (dust)	: 67.0	: 36.4 -	: 0.00
5 and 11	: Check	: 57.0	: 32.7 -	: 1.03
6 and 13	: Corona 0.1 per cent, 1 hr	: 60.5	: 33.6 -	: 0.00
7 and 14	: Copper sulphate-lime	: 53.0	: 35.6 -	: 0.00
8 and 15	: No.40-S. dust	: 72.0	: 36.3 -	: 0.00
11 and 16	: Check	: 57.0	: 33.2 -	: 0.87

It will be seen from the figures in Table 1 that all of these treatments increased the yields if comparison is made with the average of the nearest two checks. On the whole, however, considering cost and ease of application, copper carbonate appears to be the most satisfactory treatment for controlling bunt in this locality.

Smuts of Barley

Fairly satisfactory results were obtained from the barley seed treatment experiments. In the rod-row series the same treatments which gave best results in the 40th-acre plots were as a rule best. A number of materials which were not used in the larger plots were tested in the rod-row experiments. None of these gave any outstanding results, however. The results of the 40th-acre plot experiments are given in Table 2.

Table 2. Effects of seed treatments on germination, smut control, and yield of Tennessee Winter Barley sown in 40th-acre plots on Arlington Experiment Farm, Virginia. September 23, 1922.

Plots	Treatment	Average germination	Average per cent covered	Average per cent smut loose	Average yield bu. per acre.
1 and 17	Check	77.9	14.2	5.1	33.3
2 and 18	Uspulun 0.3 per cent, 1 hr.	82.3	trace	trace	36.3
3 and 19	Chlorophol 0.3 per cent, 1 hr.	81.4	trace	trace	45.8
4 and 20	Germisan 0.3 per cent, 1 hr.	82.7	trace	trace	44.7
5 and 21	Formaldehyde 1:320 10 min.	72.6	17.1	0.3	35.4
6 and 22	Copper carbonate (dust)	86.7	15.3	3.1	33.1
7 and 23	Check	77.9	21.4	2.2	39.5
8 and 24	Corona 620 0.2 per cent, 1 hr.	73.2	trace	trace	41.5
9 and 25	Corona 620 0.2 per cent, $\frac{1}{2}$ hr.	70.6	trace	trace	39.7
10 and 26	Corona 620 0.2 per cent, $\frac{1}{4}$ hr.	78.2	trace	trace	45.2
11 and 27	Corona 620 0.1 per cent, 1 hr.	79.2	trace	trace	43.3
12 and 28	Corona 620 0.05 per cent, 1 hr.	85.4	trace	trace	43.1
13 and 29	Check	77.9	18.3	3.5	39.4
14 and 30	Semesan 0.3 per cent, 1 hr.	81.3	trace	trace	47.6
15 and 31	Semesan 0.2 per cent, 1 hr.	79.5	13.5	2.2	41.9
16 and 32	DuPont No. 12 dust	84.7	7.6	1.7	33.6
33	Check	77.9	10.2	1.0	41.2

The figures in Table 2 show that all of the liquid treatments with the exception of formaldehyde and a 0.2 per cent solution of Semesan controlled the smuts. Neither of the dusts, nor copper carbonate, nor DuPont No. 12 gave satisfactory results. Plots sown to seed treated with Chlorophol and Semesan (0.3 per cent) yielded best.

Chlorophol and formaldehyde were used by Mr. Taylor for treating seed of three varieties of barley in a varietal experiment to determine their relative effects on yields in the absence of diseases. A 1:320 solution of formaldehyde was used and the seed was soaked for 10 min. Chlorophol was used in a 0.3 per cent solution and the seed was soaked for 1 hour. Table 3 shows the results of this experiment.

Table 3.—Yields of 5 varieties of barley treated with Chlorophol and formaldehyde, sown in varietal plats on Arlington Experiment Farm, Virginia, September 26, 1922.

Plat	Variety	Treatment	Bu. per acre
6	Tennessee Winter	Formaldehyde	37.9
7	Tennessee Winter	Chlorophol	46.3
13	Tennessee Winter	Formaldehyde	36.1
38	Tennessee Winter	Formaldehyde	37.1
39	Tennessee Winter	Chlorophol	47.8
45	Tennessee Winter	Formaldehyde	33.3
11	Nakano Wase	Formaldehyde	41.0
12	Nakano Wase	Chlorophol	48.3
42	Nakano Wase	Formaldehyde	43.5
43	Nakano Wase	Chlorophol	49.4
17	Selection 52	Chlorophol	63.4
18	Selection 52	Formaldehyde	64.3

The figures in Table 3 show that the yields of Tennessee Winter and Nakano Wase were much better in plats sown to seed treated with Chlorophol. The yields are about the same in the case of Selection 52.

Smuts of Oats.

The experiments with Winter Turf oats were not satisfactory, either in the red-row or 40th-acre plat series. Very little smut developed, even in the checks, but all plats regardless of kind of treatment had traces of smut. The yields from plats sown to treated seed were slightly better than the checks in some cases but none of these were striking.

Knerson oats sown in red-row treatment experiments in the spring showed slightly better results from the standpoint of smut control. The results of this experiment are given in Table 4.

Table 4—Germination and percentages of smuts in Kernson oats treated with various disinfectants after smutting with spores of loose and covered smuts. Seed treated March 6, except the treatment with formaldehyde which was March 9, 1923. Seed sown April 5, 1923, on Arlington Experiment Farm, Virginia. Germination records made April 21, 1923.

Treatment	Series 1		Series 2		Average	
	Per cent	Per cent	Per cent	Per cent	percentages	
	: germ- ination :	: smut :	: germ- ination :	: smutty heads :	: Germ- ination :	: Smut :
Check (smutted)	: 84.6	: 1.5	: 87.0	: 6.0	: 85.8	: 3.75
Chlorophol 0.3 per cent 1 hr.	: 90.6	: 0.0	: 92.3	: 0.0	: 91.7	: 0.0
Chlorophol 0.3 per cent $\frac{1}{2}$ hr.	: 89.0	: 0.0	: 95.0	: 0.0	: 92.0	: 0.0
Chlorophol 0.2 per cent 1 hr.	: 91.2	: 0.0	: 89.2	: 0.0	: 90.2	: 0.0
Chlorophol 0.2 per cent $\frac{1}{2}$ hr.	: 88.6	: 0.0	: 92.5	: 0.3	: 90.7	: 0.15
Semesan 0.3 per cent $\frac{1}{2}$ hr.	: 92.3	: 0.0	: 92.6	: 0.3	: 92.7	: 0.4
Semesan 0.2 per cent 1 hr.	: 91.2	: 2.0	: 93.3	: 1.0	: 92.5	: 1.5
Semesan 0.2 per cent $\frac{1}{2}$ hr.	: 92.2	: 1.5	: 93.6	: 1.0	: 92.9	: 1.25
Semesan 0.1 per cent 1 hr.	: 91.0	: 0.7	: 93.2	: 2.4	: 92.1	: 1.55
Check (smutted)	: 83.2	: 1.3	: 87.6	: 3.6	: 87.9	: 2.7
Germisan 0.3 per cent 1 hr.	: 91.6	: 0.0	: 94.4	: 0.0	: 93.0	: 0.0
Germisan 0.3 per cent $\frac{1}{2}$ hr.	: 91.6	: 0.0	: 89.2	: 0.0	: 90.3	: 0.0
Germisan 0.2 per cent 1 hr.	: 93.0	: 0.0	: 95.0	: 0.0	: 94.0	: 0.0
Germisan 0.2 per cent $\frac{1}{2}$ hr.	: 94.0	: 0.1	: 91.3	: 0.0	: 92.9	: 0.05
Germisan 0.1 per cent 1 hr.	: 92.0	: 0.0	: 94.3	: 0.2	: 93.4	: 0.1
Germisan 0.1 per cent $\frac{1}{2}$ hr.	: 94.6	: 0.0	: 94.6	: 0.1	: 94.6	: 0.05
Tillantin B. 0.2 per cent 1 hr.	: 86.6	: 0.1	: 87.0	: 0.5	: 86.8	: 0.3
Tillantin B. 0.2 per cent $\frac{1}{2}$ hr.	: 87.0	: 0.5	: 90.0	: 0.4	: 88.5	: 0.45
Tillantin C. 0.2 per cent 1 hr.	: 88.3	: 0.0	: 92.6	: 0.1	: 90.7	: 0.05
Tillantin C. 0.2 per cent $\frac{1}{2}$ hr.	: 86.4	: 0.4	: 89.0	: 0.0	: 87.7	: 0.2
Check (smutted)	: 86.4	: 4.5	: 83.0	: 4.2	: 84.7	: 4.35
Corona 620 0.2 per cent 1 hr.	: 90.3	: 0.1	: 85.3	: 0.0	: 88.3	: 0.05
Corona 620 0.2 per cent $\frac{1}{2}$ hr.	: 83.0	: 1.5	: 83.0	: 0.25	: 83.3	: 1.02
Corona 620 0.2 per cent $\frac{1}{4}$ hr.	: 83.6	: 1.5	: 83.2	: 0.6	: 83.9	: 1.05
Corona 620 0.1 per cent 1 hr.	: 84.3	: 1.3	: 87.4	: 0.25	: 86.1	: .77
Corona 620 0.1 per cent $\frac{1}{2}$ hr.	: 83.4	: 2.5	: 86.2	: 1.2	: 84.8	: 1.35
Corona 620 0.1 per cent $\frac{1}{4}$ hr.	: 83.3	: 1.5	: 89.3	: 1.0	: 89.3	: 1.25
Corona 620 0.05 per cent 1 hr.	: 93.6	: 1.7	: 86.2	: 1.6	: 89.9	: 1.65
Corona 620 0.05 per cent $\frac{1}{2}$ hr.	: 90.6	: 1.5	: 90.4	: 0.37	: 90.3	: 0.93
Corona 620 0.05 per cent $\frac{1}{4}$ hr.	: 91.4	: 1.6	: 87.2	: 0.75	: 89.3	: 1.17
Kalinat 0.3 per cent $\frac{1}{2}$ hr.	: 76.6	: 0.0	: 79.3	: 0.0	: 78.2	: 0.0
Check (smutted)	: 83.2	: 3.4	: 84.3	: 3.0	: 86.8	: 3.7
Pythal 0.75 per cent $\frac{1}{2}$ hr.	: 92.4	: 0.37	: 90.4	: 0.5	: 91.4	: 0.43
Formaldehyde 1:320, 10 min.	: 74.2	: 0.37	: 73.2	: 0.0	: 73.7	: 0.18
Formaldehyde 1:320, 10 min. water	: 73.2	: 1.6	: 74.4	: 0.37	: 76.3	: 0.93
Formaldehyde 1:320, 10 min. lime water.	: 32.0	: 0.37	: 84.2	: 0.25	: 58.1	: 0.31

Table 4. (continued):

Treatment	Series 1		Series 2		Average	
	Per cent	Per cent	Per cent	Per cent	percentages.	
	Germ-	smut	Germ-	smut	Germ-	smut
	ination	:	ination	inches	ination	:
Formaldehyde 1:320, 30 min.	: 27.8	: 0.0	: 32.2	: 0.0	: 30.0	: 0.0
Formaldehyde 1:320, 30 min. water:	75.2	: 0.0	: 76.6	: trace	: 75.4	: trace
Formaldehyde 1:320, 30 min. lime water	: 76.8	: 0.0	: 79.4	: 0.0	: 73.1	: 0.0
Formaldehyde 1:320, 1 hr.	: 24.4	: 0.0	: 29.6	: 0.0	: 27.0	: 0.0
Formaldehyde 1:320, 1 hr. water:	68.8	: 0.0	: 65.2	: 0.0	: 66.0	: 0.0
Formaldehyde 1:320, 1 hr. lime water	: 71.6	: 0.37	: 74.2	: 0.0	: 72.9	: 0.18
Check (smutted)	: 82.4	: 9.0	: 80.8	: 2.0	: 81.6	: 5.5
Copper carbonate (dust)	: 84.8	: 1.9	: 79.8	: 1.0	: 82.3	: 1.45
Corona 40-S-dust	: 84.8	: 1.9	: 89.2	: 1.1	: 86.9	: 1.5
DuPont No. 1	: 87.8	: 2.1	: 86.6	: 2.8	: 87.2	: 2.45
Seed-O-San (Pink)	: 83.8	: 2.5	: 93.2	: 3.0	: 88.5	: 2.75
Seed-O-San (White)	: 82.4	: 1.9	: 84.6	: 1.1	: 83.5	: 1.5
DuPont No. 2	: 81.4	: 2.7	: 86.2	: 0.6	: 83.8	: 1.65
DuPont No. 6	: 63.8	: 1.5	: 90.0	: 1.3	: 86.9	: 1.4

The figures in Table 4 show that the organic mercury compounds, Chlorophol, Samosan (0.3 per cent), Germisan, and Corona 62 (0.2 per cent) gave the best results from the standpoint of smut control and seed germination. Formaldehyde controlled smut but interfered with germination even though the seed was washed after treatment. Lime water reduced the injury due to the formaldehyde treatment slightly more than did clear water.

ERRATA

In the Cereal Courier, v. 15, No. 19, p. 185, August 10, 1923, the percentages in the column headed "Bushels + or - from Check," should read:

+ 1.9
+ 4.1
-25.9
-12.4
+ 5.7
+ 1.5
- 2.1
-19.3
- 7.5
- 3.4
- 1.2
+ 2.7
+10.2
+ 6.4

On page 186, the percentages in column headed "Bushels + or - from Check," should read as follows:

-10.3
- 8.2
- 1.4
+ 5.7
+ .2

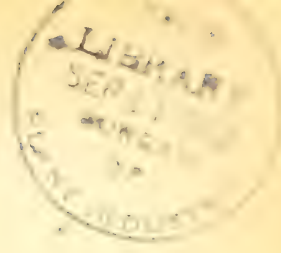
On page 187, the first two percentages in column headed "Gain or Loss from Check," should read:

+ 3.3
+ 1.4

On page 188, the percentages in column headed "Gain or Loss over Calculated Check," should read as follows:

-1.2
+ 1.7
0
- 4.5
+ .6
- .8
- .1
- 3.9
+ 3.6
- .5

In Cereal Courier, v. 15, no. 20, p. 203, August 20, 1923, first line, second paragraph, the word "barrier," between "of" and "investigations" should read "out."



CEREAL COURIER

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Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15

September 10, 1923

No. 22

Personnel (September 1-10) and Field Station (August 16-31) Issue.

PERSONNEL ITEMS.

H. S. Garrison, assistant agronomist in corn investigations, returned September 7 from a conference on corn problems with officials of agricultural experiment stations and collaborators in New York, Delaware, and Indiana.

Dr. F. E. Kuyper, pathologist in charge of barberry eradication, returned September 10 from a two-months trip in the barberry eradication area.

William H. Weston, Jr., assistant professor of cryptogamic botany at Harvard University, and collaborator with this Office, formerly in charge of the investigations of downy mildews, has been given a temporary appointment as pathologist to prepare for publication some uncompleted manuscripts dealing with the results of his studies in the Philippines from 1917 to 1921.

The following have been appointed field assistants in the barberry eradication since August 1, 1923:

Indiana: Gerald S. Setwell; Iowa: Edward W. Zeman; Michigan: William J. Ullendorff; Ohio: Dr. Orville T. Wilson; South Dakota: Bernard Murray; Wisconsin: Ralph B. Weidman.

The appointments of the following field assistants have been terminated since July 1, 1923:

Colorado: John R. Churches; Illinois: Mark A. McCarty, and Charles P. Phillips; Indiana: Edmund R. Carman, John G. Christie, Ralph J. Maggart, William W. Ridenour, Donald E. Thomas, and Wilfred B. Young; Iowa: Daughlin C. Butler and Donald E. Porter; Michigan: Dr. Harry M. Janssen, Ben W. Leland, Ernest L. Liorat, Roland G. Richards, and Roscoe G. Smith; Minnesota: John F. Allen, Everett R. Johnson, Paul A. Munkel, and Charles W. Van Cleave; North Dakota: Earl G. Ferguson; Ohio: Clair T. Huxman, Clyde F. Shickson, Edwin T. Settle, and John A. Wagner; South Dakota: Paul C. Underwood; Virginia: Ralph C. Thomas; Wisconsin: Samuel Lepkowsky and Charles J. McAlister.

MANUSCRIPTS AND PUBLICATIONS.

Department Bulletin 1172, entitled "Cereal Experiments at Chico, California," by Victor H. Florell, was received from the Government Printing Office, September 10.

The article entitled "A Method of Treating Maize Seed to Destroy Adherent Spores of Downy Mildew," by William H. Weston, Jr., was published in the Journal of Agricultural Research, v. 24, no. 10, p. 853-860. June 9, 1925. (Received September 7, 1923)

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs) (No report).

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor) (September 10) The rate and date of seeding and seedbed preparation experiment for 1923 gave results somewhat different from those obtained in previous years. Seeding the first week in October, which usually is considered most profitable, gave the poorest return. This was no doubt partly because of the dry weather previous to seeding which was followed shortly after drilling by rains that caused baking of the surface soil. The five and six-peck rate of seeding resulted in the highest yields. Disking for the seedbed gave slightly better yields than plowing. The average data obtained are as follows:

<u>Date of seeding</u>	<u>Yield (bu per acre)</u>
Sept. 15	30.5
Oct. 5	24.7
Oct. 30	35.9
<u>Rate of seeding (pecks)</u>	
2	24.2
3	29.0
4	30.7
5	33.3
6	32.6
7	31.4
8	31.1
<u>Seed-bed preparation</u>	
Disked	30.6
Plowed	30.1

Rye Yields of 1922 - 1923.

The rye yields for 1923 were above average, and the quality of the grain was fair. Early lodging influenced the seed size in some instances. The yields from 1/20-acre plots follow:

<u>Variety</u>	<u>C.I.No.</u>	<u>Bu. per acre.</u>	<u>Variety</u>	<u>C.I.No.</u>	<u>Bu. per acre.</u>
Von Ruenger	173	41.3	Rosen	195	37.2
Abruzzes	40	41.5	Abruzzes Sel.	40-1	35.9
Rumpau	126	38.9	St. Johns	130	33.8
Von Ruenger	133	38.2	Henry	132	34.9
Winter	208	37.7	Giant Winter	30	33.6
Virginia	120-1	37.4	Mexican	108	33.0
			Ivanof	34	26.0

Spelt and Emmer Yields of 1922 - 1923.

The yields of spelt for 1923 were very good and that of Black Winter emmer slightly above average. The yield of grain of Alstrom, C. I. 3264, after deducting chaff was slightly more than the average of the neighboring Purplestraw wheat checks. The data given for the spelts is based on the average of two 40th-acre plats and that for emmer on a single plat of the same size.

<u>Variety</u>	<u>C.I. No.</u>	<u>Bu. per acre</u>	<u>Wheat check (Ave.)</u>
Alstrom	1773	77.5	34.7
Alstrom	3264	66.6	34.7
White Bearded	1724	77.7	34.7
Black Winter	2337	24.5	34.7

Preparations for the seeding of the 1924 small grain crop are now in progress. The indications are that the extent of the experimental field work will be about the same as in 1923. A few new varieties or selections will be added to the wheat varietal experiment and several of the less promising ones discarded.

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love)

(September 6) The drought which has been very pronounced during the summer continued during the month of August and the deficiency in rainfall for August was 2.7 inches. The total deficiency for the year is nearly seven inches. Consequently we were unable to do any plowing for wheat until September 5, following a rain of about half an inch on September 3. Plowing is now being done, but without more rain it will not be possible to sow wheat, particularly the experimental material, because in many places the seed cannot germinate.

Threshing is nearly all completed and will be done about September 10. We have nearly finished preparation of the seed for sowing the red-row material and next will prepare seed for the continuance of the study of hybrids.

A number of new selections of rye have been made which will be seeded in isolated acres. Part of this rye, however, is to be sown in such a manner that we can protect it from foreign pollination by the use of canvas.

Preparations are now being made for the exhibit at the State Fair to emphasize the importance of good seed and show the extent to which a number of strains have been increased and are now being grown by farmers.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (August 22) On the Station many rices are heading, both in the nursery and in the plats. It is hoped to have some good seed of several important varieties for sale this fall.

So far the summer has been very cool. When high temperatures were being reported from Washington and other cities, the maximum at Crowley was about 85 degrees, F. The highest temperature so far recorded at the Station is 95 degrees F. Rain fell nearly every day during the greater part of July but only in light showers. Probably the highest amount recorded for one day was 0.70 inch.

Early in the week of August 6 the writer visited the rice crop in the region from Baton Rouge south to Darnside and at Donaldsonville west of the Mississippi River. The conditions are discouraging. There is very little rice in all this district and apparently the quality is not very good. Other crops also are poor, mainly because of the heavy rains in July. This is true in the district from La Fayette east to the River.

Agricultural Experiment Station, Baton Rouge (H. Stonenberg) (No report)

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (No report)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (No report)

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins) (No report)

Agricultural Experiment Station, Ames (Investigation of Crown Rust of Oats, S. M. Dietz) (No report)

Iowa State College, Ames (Barberry Eradication, J. H. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (No report)

Post Office Building, Urbana (Barberry Eradication, G. C. Curran) (No report)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust (Corn Root, Stalk, and Ear Rots, G. H. Huffer)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (No report)

College of Agriculture, Purdue University, La Fayette (Barberry Eradication, H. E. Dutton) (No report)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, J. W. Barling) (September 6) In Ohio the destruction of sprouts, where barberries have been found previously, is considered more important than pushing the original survey into new territory. Even though new locations are occasionally discovered in territory covered by the original survey, it is felt that the survey has been thorough. It cannot be said that the scouting organization in Ohio has sacrificed thoroughness for speed. Considering the number of men working on the project this spring and summer it may seem that more than nine counties should have been covered by the farm-to-farm survey prior to September 1. Cincinnati and Dover have been surveyed until July, when more than 500 plantings of scoured barberry were found within the city limits. Progress of the re-survey is very satisfactory.

All barberry locations in the counties covered by the rural survey prior to December 31, 1921, with the exception of those within the city limits of Dayton, were checked for sprouts in the summer of 1922. It was realized that checking for sprouts in Dayton would require considerable time and money because of the large number of plantings found there in the original survey. The task was temporarily postponed but was completed this year. In July and August 60 per cent of all properties, in the 29 counties covered by the rural survey prior to December 31, 1922, where barberry bushes or sprouts had been removed in 1922, were checked for sprouts and seedlings in 1923. It is believed that the seasonal resurvey will be completed by October 1. Men are now being released from resurvey duty and it is expected that the original survey will be hastened.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. E. Reddy) (No report).

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab Investigations, J. G. Dickson) (No report)

Agricultural Experiment Station, Madison (Wheat Rosette and Take-All Investigations, E. H. McKinney) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker) (August 23) The farm-to-farm survey has been completed in the following counties: Washington, Ozaukee, Sheboygan, Manitowoc, Kewaunee, Calumet, Marquette, Green Lake, Waushara, Bond du Lac, Winnebago, Wood, Chippewa, Eau Claire, and Pierce. In July 4,062 new bushes, of which 1681 were wild, were located on 319 new properties. Nearly every bush located this season was heavily infected with rust. A trace of infection was found about August 1 on oats generally throughout the State. Several heavy infections were found near barberry bushes about that time. Local spreads were found on oats at Black Earth and Marshall. Heavy infections on oats, rye, and red top were found near a large barberry hedge in Waushara County. Barley was quite heavily infected in some localities. No loss of yield as the result of rust was noticed in the extreme southeastern counties except possibly a slight loss in some fields of barley. On a field trip through northwestern Wisconsin a field of wheat near Wausau and another near Merrill were found to be heavily infected with rust. These two fields were the only two noted in that section. The only field of wheat seen north of Merrill was just across the line in Michigan, near Iron Mountain, and only a trace of infection was found here.

Arrangements were made for overwintering plots of wheat and rye at Armstrong Creek.

Between 25 and 30 demonstrations will be made at county fairs in the territory where the farm-to-farm survey was made this season. The panels furnished by the Conference for the Prevention of Grain Rust will be shown. A special demonstration also is to be put on at the State Fair at Milwaukee.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Broadening Investigations, O. S. Aamodt) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (August 23) There was a severe epidemic of black rust in the Red River Valley this year. As a result all original survey was dropped in northeastern Minnesota and every effort was concentrated in the northwestern part of the State with the object of rechecking this territory and seeing how many infection centers there were this year. The finding of three plantings in Clay County and one each in Big Stone, Traverse, and Polk Counties would indicate that there is still some inoculum being spread from common barberry in the Red River Valley.

In Big Stone County, two bushes were found near Odessa. A card with the following inscription: "This specimen was secured from a common barberry bush which helped start the stem rust epidemic in Big Stone County this year," was placed in each of the bunks and elevators in Big Stone County, each card having a specimen of common barberry attached to it.

On July 30 a detailed stem-rust survey of Clay County was made in co-operation with the epidemiological forces. Five cars were assigned each covering six townships. Every car went through its assigned townships on the same day, making notes on the amount of rust in each field of Marquis wheat and taking a typical sample from each. A total of 250 samples was brought in and three separate rust readings by different men were made again. An average percentage of rust was computed for each sample by averaging the three readings with the field reading. The samples were sent to St. Paul where they were thrashed and saved. An attempt will be made to work a correlation between the amount of shrivelling and the percentage of rust.

Extensive preparations are now being made for the Minnesota State Fair to be held September 1 to 8. The following slogan will be used: A common barberry bush in a grain-growing district is as dangerous to the grain crop as an aborigine lighting a prairie fire in the pioneer days. There will be two demonstrations, one by the State Department of Agriculture, and one by the Conference for the Prevention of Grain Rust.

An attempt is being made to get transportation for the salt now on hand. We are going to use it next month in Fillmore and Houston counties where there are many sprouts to be treated in the escaped areas.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger) (No report)

KANSAS

Agricultural Experiment Station, Manhattan (J. H. Parker) (No report)

Hays Branch Experiment Station, Hays (A. F. Swenson) (September 3) The August rainfall amounted to approximately four inches. With plenty of moisture the sorghums have made good recovery from the drought in July.

Freed, feterita, the kowliangs, and several other early varieties are beginning to ripen and will be harvested in another week. The kafirs are making the best recovery from the drought but will be at least two weeks later than usual in ripening.

The first seeding of winter wheat was made September 1 in the date-of-seeding experiment under ideal conditions as far as seedbed and available supply of moisture are concerned. A number of farmers have begun seeding.

The writer in company with E. F. Chilcott of the Woodward (Okla.) Field Station, and A. L. Hallstead, of the Hays Branch Experiment Station, made a trip to the stations in western Nebraska, eastern Wyoming, and Colorado during the week of July 20. There was an abundance of corn in the section visited.

Visitors at the Station today were: C. W. Warburton, F. D. Richey and John H. Parker of the Office of Cereal Investigations; and L. W. Kopnart of the Office of Forage-Crop Investigations.

COLORADO

Akron Field Station, Akron (F. A. Coffman) (September 1) The weather for the last two weeks of August was extremely dry and corn and sorghums have suffered from lack of moisture. Some fields have been seriously injured by the drought. In a few localities showers have relieved the situation to some extent in limited areas. In general, however, the condition of the soil is very little, if any, better than it was at this season last year. An inch or more of moisture is needed to prepare the soil for fall seeding on the Station farm.

Harvesting and threshing of the cereals was completed in August. The yields of the spring grains were the best since 1920. Winter wheat produced an exceptionally poor yield. This was one of the few seasons in the 16 years since the experiments were begun at Akron in which spring wheat outyielded winter wheat. The highest yielding winter wheat variety was Kanred, while Blacknull ranked second. The yields of the common varieties of spring wheat are better than those of durums. Quality gave the highest yield among the common spring wheats, while the Arnautka selection, made by Clyde McKee in 1912, was the best among the durums.

This season's results from the early selection from Kanred are unusually good. Its earliness appears to be unquestionable after this, the third season's comparison. This season the early selection outyielded the parent variety by a small margin.

The first seeding in the rate-and-date-of-seeding experiment of winter wheat was made August 16. This had emerged August 21. Grasshoppers have done considerable damage to these plats by eating the seedlings level with the ground.

In the course of the past two weeks the following have visited the Station. Dr. C. A. Lory, President of the State Agricultural College of Colorado, Alvin Kezer, agronomist, and E. C. McCarty and son, of the department of botany, of the same institution; E. F. Chilcott, A. L. Hallsted, John M. Stephens, and L. L.

Zook, of the Office of Dry Land Agriculture; H. M. Vinall, R. E. Gentry, and L. W. Kephart, of the Office of Forage-Crop Investigations; T. R. Stanton, A. F. Swanson, Dr. E. E. Hampton, E. A. Lungren, C. W. Marburton, F. D. Richey, and Dr. A. M. Brunson, of the Office of Cereal Investigations.

Agricultural College, Fort Collins (Barberry Eradication, E. A. Lungren) (August 10) The summer has been spent in resurveying properties where barberries had been located previously and in making an intense original survey of certain wheat areas east of the mountains. Salt was applied to all sprouts found.

At Canon City 11 original properties were found containing 89 small bushes, 331 sprouting bushes also were found. On 9 properties 727 seedlings were found. The bushes and seedlings were scattered in orchards and wooded lands. The foliage area has been cut off and salt applied to the crowns. This method has been found successful in killing the shrubs.

One typical example of rust spread from a common barberry bush was found at Yuma, Colo. It was very easy to trace the rust from the bush to wild grasses and then to the wheat.

Other infected bushes found along the Poudre River, in Larimer County, spread rust to the wild grasses in that vicinity. The earliest aecial infection was found in Yuma County June 22. At this time no rust could be found in the County except near this bush. On June 29 the same condition existed in Larimer County. On June 23 traces of stem rust were found on winter wheat near the Kansas line. This infection appeared spotted.

Cool, moist weather which set in later was ideal for uredinial development and delayed the maturity of the wheat. The spread became general. The rust varied from 50 to 75 per cent.

General rust spread also existed in the irrigated spring-wheat section. The damage here was not so marked as in the eastern part of the State.

In cooperation with the Smith-Hughes men of the State we are planning an educational campaign to familiarize the students of Agriculture with the work on the rust. With the help of these men we are organizing plots in their communities to study the organism. These methods of cooperation will enable us to find many bushes not yet located. The study of the rust organism throughout the State also is important and can be accomplished by this cooperation.

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel) (No report)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, F. U. Carter) (August report) The counties of Sheridan, Crook, and Laramie, were resurveyed in the month of August. Sprouting bushes in Sheridan County were treated with salt. Considerable time was spent in the study of the spread of rust.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, L. D. Hutton) (August 31) Since July 1 the Federal and State field assistants in South Dakota have cleared barberry bushes from approximately 17 counties in the State, comprising an area of more than 27,000 square miles. Thirty-six plantings of barberries have been found this fiscal year.

Public sentiment in the western part of the State has been in favor of barberry eradication. Some criticism of the operations has arisen in the eastern portion of the State because of the rust losses suffered this summer. To date, four different plantings have been found which have a direct bearing on the rust losses in Beadle, Spink, Day, Grant, and Clark Counties.

Dr. F. E. Kempton and R. U. Cotter spent three days in South Dakota, August 18 to 20, inspecting the rust situation in the western portion of the State.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brantzel) (No report)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue) (August 20) On July 2 the entire force, 24 Federal men and 8 State men, was assigned to resurvey work in the extreme eastern counties of the State. This resurvey was conducted in Pembina, Walsh, Grand Forks, Trail, Steele, Griggs, Barnes, and Richland counties. In addition Cass county, where the resurvey work was started in May, was completed. The resurvey of these counties, forming a block area in the eastern section of the State, was completed August 18, after which the entire force was assigned to the extreme north-west counties, Divide, Bonville, Burke, Williams, McKenzie, and Montrose. The work in these counties is original and is adjacent to the original work which was previously completed.

In the resurvey, the area was just as completely covered as possible. In this work 72 sprouting bushes were located on 54 properties; 865 bushes on 27 properties were original finds which were located in the resurvey. All the common barberry located was moderately to heavily infected. Two properties of barberry were traced from heavily rusted wheat fields. This is the first time that common barberries have been traced from rust in North Dakota.

In the original work, 624 bushes on 18 properties have been located. The largest single find of common barberry for this season was a hedge 300 feet long, containing at least 200 bushes, located on a farm $2\frac{1}{2}$ miles from Spring Brook, in Williams County. Another good-sized find for this State was located on a farm six miles east of Crosby, Divide County. The other finds in the original survey ranged from one to 25 bushes in a property.

As many demonstrations as possible have been made at the county fairs, State, and Interstate fairs, on the farms where bushes have been located, in store windows, and in banks. The most interesting demonstrations seem to be those centered around the finds, - the farm demonstrations. Publicity in the daily and weekly newspapers has been used to a large extent.

The cooperation has been very good. Editors have shown more interest in our work than ever before and are anxious to secure as much information as possible. Business men in general have been very favorable toward the campaign and are anxious to see results in the near future. Farmers as a whole, show more interest than in previous years.

Dickinson Substation, Dickinson (R. W. Smith) (August 31) The threshing of cereal plats at the Substation is completed with the exception of flax, rye, and the flax-wheat mixture experiment. Threshing in this community is well advanced. Wheat yields are rather light, averaging perhaps 10 to 12 bushels an acre. Late-sown Marquis wheat was badly rusted, weighing about 54 to 56 pounds per bushel. Marquis wheat sown at the Substation April 17 tested 53 pounds per bushel.

Oats at the Substation and in the County gave comparatively the best yields of all the cereal crops. Barley yielded fairly well and corn and millet are very promising.

The yields obtained from varietal plats of wheat, oats, rye, and barley are here given.

Average yields of wheat varieties grown in replicated 1/56-acre plats at the Dickinson Substation in 1923.

C.I.No.	Variety and group.	Av. of 4 plats.		
		Yield (bushels per acre)	Weight per bu. (a)	Stem rust per cent
	<u>Durum</u>			
6519	Nodak (Kubanka No. 98)	23.8	61.4	Trace
3320	Monad	23.3	61.4	Trace
- -	Kubanka No. 99	23.2	60.2	Trace
1440	Kubanka	22.9	61.3	12
5284	Acme	22.7	61.5	Trace
- -	Kubanka No. 74	22.6	60.5	10
- -	Kubanka No. 132	21.9	62.0	5
3322	Pentad (D-5)	21.7	62.3	Trace
5296	Mindum	21.3	62.0	10
4064	Arnautka	20.8	61.5	15
4063	Kubanka No. 8	20.4	61.2	15
5529	Kania	17.4	62.5	25
1864	Peliss	17.4	-	20
- -	Kubanka No. 144	15.7	61.0	5
	<u>Common</u>			
5573	Kota	21.8	60.0	8
3081	Preston	21.4	56.5	65
3697	Power	21.1	57.8	75
6794	Redsask	18.5	58.3	40
4500	Kitchener	18.5	54.5	75
3541	Marquis	18.3	53.0	50
3529	Red Fife	16.9	55.5	80
6255	Red Bobs	16.4	56.0	50
2374	Haynes Bluestem	16.4	53.8	90
6795	Early Triumph	15.3	55.5	50
6047	Ruby	13.8	39.0	25
6607	Quality	13.7	53.5	28
4733	Hard Federation	9.7	55.0	23

C.I.No.	Variety and group.	Av. of 2 plats		Stem rust per cent
		Yield (bu. per acre)	Weight per bu. (A)	
- -	<u>Durum</u>			
- -	Kubanka No. 94	23.2	62	Trace
- -	D-46	25.1	62	Trace
6319	Nodak (Kubanka No. 93) (c)	22.7	61.3	Trace
- -	Kubanka No. 117	22.6	62	Trace
- -	Kubanka No. 127	21.4	62	Trace
- -	Kubanka No. 34	21.2	61.5	15
- -	Kubanka No. 133	20.8	61	15
- -	Kubanka No. 33	19.1	62	1
	<u>Common</u>			
6900	Marquis x Kota (149.124)	20.9	61	10
6875	Kota (b)	20.2	61	10
- -	Kota x Kanred (bulk)	19.7	61.5	25
6892	Haynes x Emmer (c)	19.3	57.5	5
6902	Progress	19.2	61	35
6901	Marquis x Kota (149.178)	18.9	61	15
3641	Marquis (b)	18.4	60	50
6898	Marquis x Kota (149.43)	18.0	60	15
6899	Marquis x Kota (149.48)	16.1	61	18

(a) Test weight taken on threshed grain without further cleaning.

(b) Average of 4 check plats.

(c) Only one plat.

Average yields of winter wheat varieties grown in duplicate 1/48-acre plats drilled in grain stubble in the fall of 1922 at the Dickinson Substation.²

C.I.No.	Variety	Av. yield (bushels)	Weight per bushel.	Stem rust per cent.
1343	Beloglina	11.7	61	Trace
3146	Kanred	11.6	60	Trace
1353	Kanredov	11.3	60	Trace
6188	Winturzi	11.1	60	Trace
6700	Karmont	11.0	60	Trace
3149	Minhardi	10.8	60	15
3330	Buffum No. 17	10.1	59	15
1371	Turkey	10.0	60	Trace

(a) The same varieties sown in standing corn were winterkilled.

Average yields of winter and spring rye varieties grown in duplicate 1/48-acre plats drilled in grain stubble.

C.I.No.	Variety	Bushels
- -	Wisconsin No. 12-19	11.3
131	Advance	10.7
175	Dawoll (W.D. No. 309)	10.3
178-3	Selection No. 5	9.9
137	Swedish (Minn. No. 2)	9.4
- -	Polen	6.1
- -	Russian	4.4
169..	Spring Rye	11.2

Average acre yield of oat varieties grown in quadruplicated 1/56-acre plots at the Dickinson Substation in 1923.

C.I.No.	Variety	Yield(Bu. per acre)
861	White Russian	67.0
495	Golden Broom	60.7
160	Banner	57.9
741	Siberian	56.2
160-10	Banner Sel.No.10	55.8
1997	Banner Sel.From British Columbia	55.2
560	Victory	53.7
658	Big Four	52.5
2036	Early Mountain No.8	50.0
755	Lincoln	48.8
507-1	-----	45.8
658	Early Mountain No.2	45.0
689	Silvermine	47.6
134	Swedish Select	46.8
2027	Gopner	46.6
2024	Iogren	44.1
547	Iowa	38.0
489	Thorsen	32.8
441	Nebraska No. 21	30.2
165	Sixty-Day	28.1
787	Richland	27.6
1526	Vireslay Linnor	-6.8

Average yield of barley varieties grown in quadruplicate 1/56-acre plots at the Dickinson Substation in 1923.

C.I.No.	Variety	Yield(Bu. per acre)
962	Scholey	42.6
831	Hampden	39.2
907	Steigra	37.4
187	Swan Neck	37.3
203	Harold	36.8
525	Princess	34.8
162	Chassey	30.8
565	Marionville	30.6
2239	White Skyrna(S.D.25-7-10)	30.5
600	White Skyrna	29.9
1177	Wing Pedigree	25.1
505	Chile	19.5
202	Harold (White Hall-Ross)	18.5
952	Marionville	18.1
578	Gatami	18.1
920	White Gatami	17.8
1311	Flynn	17.2

Neish the most resistant selection of Kukanka developed at the Substation, again gave the highest yield. It has surpassed all other varieties in 6-year average yield. A cut 180 bushels of Neish were distributed among the farmers of the State last spring from the Substation. Kota outyielded all other varieties of common wheat.

Nearly all early varieties of wheat, oats, and barley gave comparatively low yields this year, because of injury from hot, dry weather early in June. Abundant rains later benefited the later varieties. Kukanka No. 144, an early so-called beardless variety of durum, gave the lowest yield of the durums. A small field of this variety sown more than a month later (May 19) yielded 22.1 bushels per acre. White Russian the latest of the oat varieties, gave the highest yield. Previously, it has given the lowest average yield for a period of years. Winter rye and winter wheat gave low yields, caused by dry weather in the fall followed by considerable winterkilling.

The second annual Stark County Fair will be held in Dickinson September 4, 5, and 6.

F. D. Richey visited the Substation August 13 to 20. John H. Martin is at the Substation preparing seed of winter-wheat hybrids for sowing tomorrow.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.)
(September 4) The last half of August generally has been dry and cool.

The flax nurseries have been very slow in ripening and as a result no nursery material has been harvested since August 15.

All of the flax and cereal varietal plats have been threshed, and the seed recleaned. Average yields in bushels per acre are as follows:

Flax and Cereal Mixtures.

	Yield			Yield	
	Flax	Cereal		Flax	Cereal
Flax 15, wheat 10	5.5	5.6	Flax 25, wheat 30	2.4	9.5
Flax 15, wheat 20	2.1	9.5	Flax 25	7.0	
Flax 15, wheat 30	1.6	12.2	wheat 60		18.9
Flax 25, wheat 10	4.4	5.1	Flax 20, Oats 8	5.2	7.7
Flax 20, wheat 25	5.2	7.3	Flax 20, Oats 16	5.0	11.7
			Oats 45		31.0

Flax Varieties.

Variety	C.I.No.	Yield	Variety	C.I.No.	Yield
N.Dak. No. 40013	242	11.5	Primett	12	9.6
N.Dak. Resist. No. 82	275	11.3	N.Dak. Resist. 114	13	9.4
Slope	274	10.6	Reserve	19	8.8
Chippewa	173	10.4	Dumont	3	8.1
Winona	173	10.2	Billings	18	7.0

Wheat Varieties.

Variety	C.I.No.	Yield	Variety	C.I.No.	Yield
<u>Common</u>			<u>Durum</u>		
Hotchkiss	6248	14.4	Monard	3420	15.5
Proctor	3061	13.6	Acker	3214	15.6
Pomer	3697	13.3	Modak	3319	14.4
Radask	6794	13.0	Habenka	1440	14.2
Marquis	3641	12.9	Minard	3296	14.2
Hol Bros	6255	12.6	Kubanka No. 74		14.0
Quality	6607	11.3	Kubanka No. 8	4063	12.3
Mar. Federation	4733	11.1	Peliss	1664	12.3
Baby	6047	9.0	Arkauteka	4064	12.1
			Beardless Durum		11.3

Oat Varieties

Variety	C.I.No.	Yield
Sturion	741	30.6
Lincoln	738	29.2
- - -	357-1	27.9
Iduron	2024	26.0
Gopher	2027	24.7
Century-Day	168	24.2
Victory	330	23.7
Swedish Select	134	22.9
Golden Rain	493	22.4

Barley Varieties

Variety	C.I.No.	Yield
Maricut	261	13.6
Coast	390	16.9
Harmon	331	16.6
Manchuria	364	15.4
White Swarna	196	15.4
Swanbals	187	15.0

A. C. Dillman left August 27 en route for Washington, D. C.

The Missouri Slope Fair was held Aug. 27, 28, 29 and 30. The attendance was somewhat smaller than usual.

Miss M. Martini visited the station Aug. 29 and 30.

J. H. Martin stopped here Sept. 3 on his way to Minneapolis.

Maximum temperature for the last half of August 90° August 30; minimum, 41°, August 21; precipitation, 0.55 inch.

MONTANA

Judith Basin Substation, Moccasin (R. W. May) (August 31) Frequent rains and cool weather have delayed harvesting. Harvesting usually is completed by the middle of August, but this season it probably will not be completed until nearly the middle of September.

All of the winter wheat, oat, and barley varieties, and about two-thirds of the spring wheat varieties have been harvested. None of the flax in either nursery rows or plats will be ready for harvest for a week or ten days. Practically all of the nursery material of the small grains except the single-row winter wheats, has been harvested.

As a whole, fall seeding will be late this year but it is hoped part of the winter wheat nursery can be sown next week. The seeding of the plats and a part of the nursery must be delayed until after threshing.

The precipitation for August was 2.63 inches, as compared with 1.41 inches as the average for 25 years. The total precipitation from January 1 to August 31 was 16.35 inches, which is only 0.16 of an inch less than the average total annual precipitation.

Recent visitors at the Substation were Director F. B. Linfield, of the Montana Agricultural Experiment Station, and F. D. Richey and J. H. Martin, of the Office of Cereal Investigations.

State College of Agriculture, Bozeman (Barberry Eradication, W. H. Christopher) (September 7) Stem rust of wheat is prevalent throughout the eastern half of the State. Losses average about 30 per cent as far west as Lewistown. In that vicinity about half of the crop has been harvested with losses ranging from 1 to 10 per cent; the remainder is rusted and losses will average about 40 per cent.

Rust is prevalent on wheat in Gallatin, Madison, and Ravalli counties. A very slight attack is reported from Flathead County. The Yellowstone Valley from Glendive to Livingston has sustained losses varying from 1 to 30 per cent.

No stem rust has been found on oats or rye. Orchard grass and timothy are heavily infected with rust throughout the State. Black chaff of wheat and basal glume rot are reported as causing slight damage in Gallatin County. Loose smut of oats is prevalent over the entire State, as is covered smut of barley, and stinking smut of wheat. The damage is estimated from 1 to 5 per cent in each case. Very little *Helminthosporium* has been observed. Ergot is prevalent on various species of *Elymus* and *Agropyron* but none has been observed to date on rye. Leaf rust of wheat and leaf rust of rye are abundant in all localities.

An escaped planting of *Berberis vulgaris* located in Fergus County late in August was found to have some dried necia on the leaves. As all the wheat in this vicinity is heavily rusted, it is impossible to trace infection to these bushes. It is a noticeable fact, however, that wheat near Judith Gap, about 40 miles south, is only slightly rusted, and the same is true in the regions west and north of the barberries.

H. M. Jennison was a caller at the Bozeman office September 4.

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe) (No report)

Agricultural Experiment Station, Moscow (Stripe Rust Investigations, C. W. Hungerford) (No report)

OREGON

Sherman County Branch Station, More (D. F. Stephens) (August 13) Threshing on the Station began August 4 and has been continued since that date without interruption. All threshing, including the nursery, will be completed by the middle of next week.

Following is a summary of the results obtained in the tillage experiments:

Time-and-depth-of plowing for winter wheat after fallow,-1923.

Early spring plowing (April 1)	34.1 bu. per acre
Medium-early spring plowing (May 1)	32.5 bu. per acre
Late spring plowing (June 1)	29.7 bu. per acre
Early fall plowing (dry)	31.9 bu. per acre
Late fall plowing (wet)	32.1 bu. per acre

Shallow spring plowing (5 inches)	23.8 bu. per acre
Deep spring plowing (10 inches)	23.8 bu. per acre

The yields given above are averages for 3 1/10-acre plats given various fallow treatments for each date and method of plowing.

Turkey winter wheat grown on late-spring-plowed or insufficiently cultivated fallow contained from 75 to 95 per cent of yellowberry kernels, while that grown on early-spring-plowed and frequently cultivated fallow contained from 5 to 35 per cent yellowberry kernels. The application of 150 pounds of nitrate of soda in the early spring on winter wheat sown on June-plowed summer fallow increased the yield 33 1/3 per cent and decreased the percentage of yellowberry kernels from 90 to 15 per cent.

Good yields were obtained from all the plats of the rotation experiments. The highest yield in any of the rotation series was 50.0 bushels per acre from Turkey wheat after fallow in the 4-year rotation, winter wheat-peas-peas-fallow. The highest yield of Early Baart spring wheat in the rotation experiments was 41.3 bushels per acre after corn in the 4-year rotation, spring wheat-spring barley-matured fallow-corn. The highest yield of Mariout spring barley in the rotation experiments was 30.3 bushels per acre after fallow in the 3-year rotation, barley-barley-fallow.

Winter wheat varieties in the varietal experiment averaged from 25 to 46.5 bushels per acre in yield. The highest yielding varieties were a beardless "Turkey" wheat obtained from the Idaho Agricultural Experiment Station, Turkey, 1571C, Hybrid 123, and Triplet. A purple-straw selection from the smut-resistant variety Turkey, 1571C, yielded 40.7 bushels per acre. "Smutproof" yielded 29.5 bushels per acre, ranking third from the last in a trial of 29 varieties. A complete list of the winter wheat varieties with yields will be furnished later.

The spring wheat varieties in the varietal experiment ranged in yield from 20.3 bushels per acre for Quality to 45.3 bushels per acre for Federation. Many of the spring wheat varieties exceeded the yields obtained from the winter varieties. Six spring wheats exceeded 40 bushels per acre in yield. These were Federation, Onas, White Federation, Hard Federation, Currawa, and Major.

E. B. Bayles spent part of the week of August 13 at Pullman studying the cereal breeding nursery at the Washington Agricultural Experiment Station and making some selections from wheat hybrids that may be of value for the Station at Moro.

(August 25)
A shower of 0.3 inch of August 20 delayed threshing operations for 2 day. All threshing, including the nursery is completed. The following tables give the yields obtained in the varietal trials with winter and spring wheat and oats.

Acres yields in bushels of winter wheat varieties grown at Moro, Oreg., in triplicate 1/20-acre plots in 1923.

Rank:	Variety	C.I.No.	Yield Bu. per Acre			
			Se-	Se-	Se-	Av.
			1	2	3	
1	:Turkey x Fultzo Mediterranean	:6688	: --	:44.7	:45.3	:46.5
2	:Turkey (Sel.P)	:13710	: --	: --	:40.7	:40.7
3	:Hybrid 123	:4512	:40.3	:39.3	:42.0	:40.5
4	:Turkey	:13710	:31.3	:30.0	:43.0	:35.1
5	:Triplet	:5408	:38.7	:38.7	:44.6	:39.0
6	:Turkey (Sel.W)	:13710	: --	: --	:38.7	:38.7
7	:Hybrid 123	:4511	:36.3	:39.7	:39.3	:38.4
8	:Martin	:4463	: --	:34.7	:42.0	:38.4
9	:Kamrod(Montana Seed)	:5146	: --	:36.0	:36.7	:37.3
9	:Nebraska 50	:6230	:36.3	:35.3	:33.7	:36.1
10	:White Odessa	:4658	:36.3	:37.7	:34.7	:38.9
10	:Kamrod	:5146	:35.0	:35.7	:37.0	:35.9
11	:Turkey x Hybrid 123 (sel.52)	: --	:33.7	: --	:37.7	:35.7
12	:Turkey	:1571	:33.3	:35.3	:37.7	:38.4
13	:Kharkov	:1442-12	:33.0	:40.0	:33.0	:38.3
14	:Shorman	:4430	:38.7	:37.7	:32.3	:35.2
15	:Blackdull	:6231	:35.3	:36.7	:33.3	:35.1
16	:Local Turkey	:4429	:35.7	:36.3	:33.0	:35.0
16	:Alberta Red	:2979	:33.0	:34.3	:37.7	:35.0
18	:Early Arcadia x Hard Federation (1992A)	: --	: --	:35.0	: --	:35.0
17	:Crimson	:3055	:32.7	:34.3	:35.3	:34.1
18	:Argentine	:1869	:32.7	:35.3	:32.7	:33.6
18	:Fortyfold	:4180	:35.3	:31.7	:34.0	:33.6
19	:Turkey	:1556	:34.0	:34.3	:31.7	:33.3
20	:Hissar	:543	:33.7	:32.7	:32.7	:33.0
21	:Turkey	:1556B	:30.3	:30.3	:32.7	:31.1
22	:Ridit (Smutproof)	:6703	: --	:29.3	: --	:29.3
23	:Turkey x Florence (G334)	: --	:23.3	:25.0	:29.0	:28.4
24	:Banner Bucklew	: --	: --	:25.0	: --	:25.0
: Average						:35.8

Acres yields in bushels of spring wheat varieties in duplicate 1/20-acre plots at Moro, Oreg., in 1923.

Rank :	Variety	C.I.No.	Yield(Bu. per acre)			
			Series	Series	Average	
			1	2		
1	: Federation	: 4734	: 41.5	: 49.0	: 45.3	
2	: Onas	: 6221	: 40.3	: 30.0	: 40.2	
3	: White Federation	: 4931	: 42.7	: 33.3	: 41.0	
4	: Hard Federation	: 4733	: 43.3	: 38.3	: 40.8	
4	: Currawa	: 4932	: 36.3	: 46.3	: 40.8	
5	: Alger	: 4934	: 43.7	: 45.0	: 40.4	
6	: Bunyip	: 4165	: 39.0	: 33.3	: 37.7	
7	: Sunset	: 4721	: 38.7	: 38.7	: 37.7	
8	: Bonidict	: 6220	: 36.0	: 36.0	: 37.6	
9	: Furbank	: 4169	: 33.7	: 40.7	: 37.2	
10	: Early Burt	: 1007	: 33.7	: 35.3	: 37.0	
11	: Bobs	: 2326-1	: 35.3	: 34.7	: 35.0	
12	: Redask	: 5794	: 31.7	: 40.3	: 35.0	
13	: Red Bobs	: 6235	: 36.0	: 33.0	: 34.5	
14	: Marquis	: 4166	: 31.0	: 36.7	: 33.8	
15	: Pacific Bluestem	: 4027	: 31.0	: 36.7	: 33.8	
16	: Little Club	: 4066	: 26.7	: 36.3	: 31.5	
17	: Quality	: 6007	: 33.7	: 26.3	: 30.0	
: Average					:37.7	

Acre yield in bushels of spring oat varieties in duplicate 1/20-acre plots at Moro, Oreg., in 1925.

Rank :	Variety	C.I.No.	Yield Bu. per acre		
			Series 1	Series 2	Average
1	Three Grain	1980	77.5	95.6	86.6
2	-----	357 -1	87.5	85.0	86.3
3	Idahone	1854	82.5	81.2	81.9
3	Western Wonder	1981	81.9	81.9	81.9
4	Sixty-Day	168	84.4	78.3	81.6
5	Richland	786	84.4	75.1	81.3
5	Alvion	729	83.8	78.7	81.3
6	Sixty-Day	168-1	85.0	75.6	80.3
7	Siberian	658	73.8	80.6	79.7
8	Iogren	2024	81.9	75.6	78.8
9	Swedish Select	134-1	74.4	73.1	76.3
10	Harrison	469	80.6	70.6	75.6
	Average				81.0

CALIFORNIA

Delta Rice Field Station, Biggs (J. W. Jones) (September 1) The weather for the last half of August has been ideal for heading and pollination of rice.

At the Station the early varieties are fully headed and are ripening, mid-season varieties are about fully headed, and the late varieties are just starting to head. Much of the rice on the Station is **short**, however, and lacks that vigorous growth which seems to be so essential for high yields.

The commercial fields in this vicinity, which are mostly sown to Caloro, are now about fully headed. Crop prospects have improved slightly during the month of August. With normal weather from now on harvest should begin at about the usual time - September 25 for early varieties and about October 5 to 10 for midseason varieties.

Maximum temperature for August, 107 degrees; minimum temperature, 52 degrees; greatest daily range in temperature, 42 degrees. Total evaporation for August, 7.275 inches.

University Farm, Davis (V. H. Florell) (No report)

Agricultural Experiment Station, Berkeley (F. M. Briggs) (No report)

CEREAL COURIER

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Personnel (September 11-20) and Field Station (September 1-15) Issue.

PERSONNEL ITEMS.

Dr. Carleton R. Ball, cerealist in charge, returned September 17 from a trip by automobile across Maryland, Pennsylvania, New Jersey, New York, and Connecticut en route to Massachusetts. On the way back he drove across northern Massachusetts and northern New York, visiting Cornell University at Ithaca and the New York State Agricultural Experiment Station at Geneva, and Niagara Falls, Watkins Glen, and Gettysburg Battlefield. In New York State unusually dry weather during the late summer had been favorable to harvesting and threshing small grains and to the harvest of clover seed but unfavorable to corn and pastures. A heavy frost occurred on the night of September 14. At Ithaca, Doctor Ball visited the experiment plats, inspected the new cereal nursery warehouse, and discussed cooperative experiments and publications.

Frederick F. Blaine, field assistant in the cereal nursery and field experiments at the Arlington Experiment Farm, since June, resigned September 11.

Arthur C. Dillman, agronomist in charge of flax investigations, returned to Washington September 15, after spending three months in the field. He reports that the flax crop of 1923 in the states of Minnesota, North Dakota, South Dakota, and Montana was quite generally good, and promised yields above the average for the past few years. Flax was grown more generally as a principal cash crop, rather than as a secondary or catch crop, as has been the case in recent years. Large fields of flax were common in many parts of Minnesota, eastern North Dakota, and eastern South Dakota.

Experiments with the mixed crop, flax and wheat, were inspected by Mr. Dillman at St. Paul, Red Wing, and Crookston, Minn.; Fargo, Mandan, and Dickinson, N. Dak.; Redfield, S. Dak.; and Moccasin and Bozeman, Mont. In general, the mixed crops were very satisfactory and it appears that this method of growing flax promises to be one of the most practical ways of increasing the production of flaxseed in the principal spring wheat area. It was very apparent in the experiments at Red Wing, St. Paul, and Crookston that the mixed crop was less weedy than the flax in pure stands. There was a greatly increased acreage of the mixed crop in the vicinity of Red Wing, Minn., and, as the wheat was badly injured by black stem rust, the flax in the mixture promised to give much more profitable returns than the wheat.

A great many fields of the mixed crop were grown by farmers throughout the four principal flax-producing States and the method has had a practical test. Mr. Dillman saw six fields of the mixed crop near Watertown, S. Dak., three near Aberdeen, and one or more fields near Redfield, S. Dak., and Jamestown and Bismarck, N. Dak. A farmer at Watertown, S. Dak., has one field of 60 acres of the mixed crop, seeding $1\frac{1}{2}$ bushel of flax with $1\frac{1}{2}$ bushel of Marquis wheat, and another field of 70 acres of pure flax.

Genuine wilt-resistant flaxseed is in great demand, because flax is being grown more extensively on old lands. Considerable losses from wilt occurred in parts of Minnesota, eastern South Dakota, and eastern North Dakota because farmers were unable to obtain wilt-resistant flax and took a chance in seeding common flax.

New varieties of wilt-resistant flax which give very great promise are Winona and Chippewa, developed at the Minnesota Agricultural Experiment Station, and now being increased for distribution. At the Northwest Experiment Station, Crookston, Minn., 24 acres of the Chippewa flax were grown this year, with prospects of a very large crop of seed. N. D. No. 40013, C. I. No. 241, is a new wilt-resistant variety selected by T. E. Stoa, of the North Dakota Agricultural Experiment Station. This variety produced the highest yield in the varietal plots at Mandan, this year. Slope, C. I. No. 274, a new variety developed at Mandan, is very similar to C. I. No. 241. A selection of Argentine flax developed by H. D. Long, of the North Dakota Agricultural Experiment Station, is also very promising.

On the Belle Fourche Experiment Farm, Newell, S. Dak., Mr. Dillman discovered an infection of the pasmo disease of flax which recently has been described by W. E. Brentzel, assistant pathologist. This was found in a late sown plot of N. D. R. No. 114 flax, being quite generally distributed throughout the plot of about one-eighth acre. It was estimated that about 7 per cent of the plots were affected. Very serious injury was done by crickets to flax and alfalfa seed in the vicinity of Newell. The crickets eat the seed from the bolls both from the standing plants and from the harvested crop while it lies in bunches on the ground to cure.

Dr. Sophia H. Eckerson, who, under appointment as agent since October 1, 1922, has been engaged in microchemical research on the resistance and susceptibility of wheat and corn to the wheat scab fungus, conducted in cooperation with the Wisconsin Agricultural Experiment Station at Madison, Wis., has completed her investigations. Her appointment was terminated September 15.

John R. Fitzsimmons, field assistant in barberry eradication, with headquarters at La Fayette, Ind., during the past summer, came to Washington September 13 to confer with the pathologist in charge of barberry eradication. His appointment was terminated September 17, on which day he left for Harvard University to resume graduate study in landscape architecture.

The appointment of Minter P. German, field assistant in cereal investigations at Arlington Experiment Farm during the summer, was terminated September 12.

Dr. A. G. Johnson, pathologist in charge of investigations of imperfect and sac fungi, returned to Washington September 13 after an extended field trip in Indiana, Illinois, Wisconsin, and North and South Dakota. With the exception of the travel in North Dakota the trip was made by automobile. In addition to visiting the cooperative experiments at La Fayette, Ind., Urbana and Bloomington, Ill., Madison, Wis., and Fargo, N. Dak., numerous corn fields were inspected along the

way. Experiments at the various points were found to be well organized and progressing favorably, and a number of manuscripts are in progress presenting data already accumulated. A noticeable increase in flax acreage was noted in South Dakota and Minnesota. In general crops were found to be satisfactory in the various sections visited, except that on the return trip it was noted that frost had caused considerable injury to corn along the route of travel in North and South Dakota, Wisconsin, Illinois, Indiana, and Ohio. In practically all of the areas traversed, however, the high lying fields had escaped frost and were maturing normally. In Pennsylvania there was less injury from frost, especially in the higher areas.

Dr. F. E. Kempton, pathologist in charge of barberry eradication, who recently returned from an inspection of the barberry eradication area, reports that the original survey is going forward much as planned, although the condition of the roads, the topography of the country, and the difficulty of finding bushes in woodlands has retarded progress in some areas. Salt has proved very satisfactory in killing bushes and preventing sprouting if it is applied in sufficient quantities and if every plant is completely surrounded. Resurveys in areas where bushes had been dug or pulled by teams or tractors located many sprouts. Seedlings were found in abundance growing from seeds scattered by birds and other agencies. In order to eradicate completely all barberry bushes in these areas it will be necessary to resurvey them several times.

A few large areas of escaped bushes and numerous small ones have been located in the older-settled portions of the barberry eradication area. Some outstanding large areas were seen. Near Holland, Ohio, many escapes have grown up in woods and pasture lands about a stone quarry. Most of these have been treated with sodium arsenite solution or with salt, both methods being successful. An area near Chagrin Falls, Ohio, extends over at least 10 square miles, almost every farm having some escaped bushes. Near Columbus and Sidney, Ohio, the use of kerosene for killing barberries has been tried and gives promise of success.

In central Michigan numerous bushes are being found. Two areas of escapes were visited, one north of Flint, where 400 bushes were scattered over 7 farms. the other near Lapeer, having numerous large bushes and many seedlings scattered over woodlands.

The outstanding find in Indiana has been Berberis canadensis along the Tippecanoe River, near Monticello, but whether or not this species is native to the State has not yet been determined. Clumps of it were located on the limestone and gravelly banks of the river at various places for a distance of 50 miles north of its confluence with the Wabash River, but they were not found scattered through the woodlands on either side of the river. Some plants showed infection, but there was no noticeable spread of rust to grains. In several counties where rust occurred in damaging amounts near common barberries last year very little rust was found this year following the removal of the bushes.

The campaign in Illinois is progressing as planned. Numerous bushes are being found on farms and in cities not previously surveyed. Salt is being used to destroy them in most of the farming districts, while in towns and cities they are being dug.

In Wisconsin many bushes are being found in the counties along Lake Michigan, but as the survey is extended northward through the central portion of the State, fewer plantings are being found than in the southern portion. However, some barberries appear in practically all the older-settled sections.

In Minnesota, counties north and west of St. Paul were visited and a trip was made by automobile northward to several counties in the Red River Valley. The development of rust in this area made it seem advisable to survey certain counties a second time to ascertain the effectiveness of the preliminary survey and to trace the source of the rust. Reports of this second survey showed that some plantings had been overlooked and that much of the rust had developed from these bushes as well as from numerous sprouts and seedlings that had come up where bushes had previously been removed. Similar results were obtained from surveys of some of the counties in eastern North and South Dakota.

On an extended automobile trip through Montana, barberry bushes were found in counties that had not been carefully surveyed, and some escaped bushes were also located. Near Rollins on Flathead Lake, about 1,700 seedlings and small bushes had developed in pine woodlands and along the lake front, spreading from a hedge of purple barberries. Three plantings were eradicated in the Bitter Root Valley, and a large hedge was noted at Sheridan. No rust was found in the western portion of Montana.

In the northern and eastern portions of Wyoming a few sprouting bushes were found and treated, but the indications are that practically all barberries have been eliminated from the State.

In Colorado practically all barberries have been eliminated east of the mountains. A few sprouts and seedlings were noticed on an irrigation project near Berthoud and a similar area near Canon City. The seedlings are being pulled and the larger sprouts and plants are being treated with salt. These areas will need to be watched for several years. Rust developed rather early from a few bushes near Yuma, in eastern Colorado. Very little rust was found in the western or irrigated sections, but on late wheat in the eastern dry-land areas rust was rather severe, increasing in the northern and eastern counties and becoming less as one traveled westward.

In southwestern Nebraska rust was even more severe than in northern Colorado and a number of rusted barberries were located. The original survey of the entire State will be practically completed this season. A second survey has been begun in a few counties to ascertain whether or not all barberries were found on the preliminary survey.

In southeastern Iowa the campaign has progressed somewhat more slowly than was expected because of the condition of the roads and the necessity for surveying wooded portions carefully. The original survey probably will not be completed this year. Numerous bushes have been found on farms, including several small areas of escapes, but in contrast to last year's experience no large area have been found that had not previously been reported. While some rust had developed on grains it was not so severe as in western Nebraska, South Dakota, North Dakota, and Minnesota.

The number of barberry bushes found this season and the many sprouts and seedlings remaining at the beginning of the season on properties previously surveyed were no doubt sufficient sources for the development of rust in the barberry eradication area, especially as many of these were rusted earlier and more severely than usual.

Miss Mildred B. Longyear, clerical assistant in the cooperative cereal disease investigations, conducted under the direction of Dr. G. N. Hoffer, at La Fayette, Ind., resigned September 17 to enter Purdue University.

Frederick D. Richey, agronomist in charge of corn investigations, returned to Washington September 10 after a five-weeks' trip. He visited the agricultural experiment stations at Columbus, Ohio, La Fayette, Ind., Ames, Ia., Fargo, Mandan and Dickinson, N. Dak., Bozeman, Moccasin, and Huntley, Mont., Sheridan, Wyo., North Platte and Lincoln, Nebr., Akron, Colo., and Hays and Manhattan, Kans., conferring with Station officials and members of the Office staff concerning present and prospective cooperative investigations with corn. He was met at North Platte, Nebr., by Dr. A. M. Brunson, of Manhattan, Kans., who accompanied him to Akron, Colo. Mr. T. Jenkins and A. A. Bryan, of Ames Iowa, joined Mr. Richey at Manhattan, Kans., and accompanied him to Lincoln, Nebr., and Ames, Ia.

Russel G. Rothgeb, field assistant in the cereal and nursery field experiments at Arlington Experiment Farm during the summer, resigned September 15 to resume college study.

George H. Slye, appointed messenger in the Office in June, resigned September 15 to return to school.

Miss Ella Stevens, file clerk in the Office, resigned September 11.

Miss Thelma S. Tilton was appointed September 17, to take the place of Miss Mildred B. Longyear as clerk in the cereal disease investigations conducted in cooperation with the Purdue University Agricultural Experiment Station at La Fayette, Ind.

C. W. Warburton, agronomist in charge of cereal agronomy investigations, returned September 16 from a four-weeks' inspection of experiments with corn, grain sorghums, and rice. After a week of automobile travel from Washington to Indiana and Illinois with Dr. A. G. Johnson, he visited the Iowa and Nebraska agricultural experiment stations, where extensive corn breeding experiments are under way. At Akron, Colo., he was joined by F. D. Richey and Dr. A. M. Brunson. Mr. Richey and Mr. Warburton next inspected the grain-sorghum experiments at the Hays Branch Station, Hays, Kans., where they were met by J. H. Parker, of the Kansas State Agricultural college. Professor Parker returned with them to Manhattan where an inspection was made of the corn and sorghum breeding experiments.

On September 6 Mr. Warburton left Manhattan accompanied by S. C. Salmon, of the Kansas State Agricultural College, with whom an inspection was made of grain-sorghum experiments at Woodward Field Station, Woodward, Okla., Lubbock Substation, Lubbock, Tex., and Big Spring Field Station, Big Spring, Tex. A surprisingly large acreage of cotton and grain sorghums was seen on a stage trip of 120 miles from Lubbock to Big Spring. From Big Spring Professor Salmon returned to Manhattan, while Mr. Warburton continued his trip to College Station, Tex., Crowley and Baton Rouge, La., and Knoxville, Tenn.

MANUSCRIPTS AND PUBLICATIONS.

A manuscript entitled "Intracellular Bodies Associated with the Rosette Disease and the Mosaic-Like Leaf Mottling of Wheat," by H. H. McKinney, S. H. Eckerson, and R. W. Webb, for publication in the Journal of Agricultural Research, was submitted September 20.

A manuscript entitled "The Extraction of Nitrogenous Constituents from Plant Cells," by W. E. Totttingham, E. R. Schultz, and S. Iepkovsky, was approved September 20 for publication in the Journal of Biological Chemistry.

Galley proof of manuscript entitled "Acidity of Corn and its Relation to Vegetative Vigor," by Dr. Annie M. Hurd, for publication in the Journal of Agricultural Research, was read September 19.

Page proof of Department Bulletin 1162, entitled "The Role of the Genus *Rhymus* in the Dissemination of Crown Rust," by S. M. Dietz, was read September 12.

Second page proof of Department Bulletin 1173, entitled "Experiments in Wheat Production on the Dry Lands of the Western United States," by D. E. Stephens, M. A. McCall, and Aaron F. Bracken was read September 15.

The biennial report of the Wisconsin State Department of Agriculture for the years 1921 and 1922 contains a brief article entitled "Barberry Eradication Reduces Grain Rust Losses," by William A. Fuller, State leader of barberry eradication in Wisconsin, Wis. Dept. Agr. Bul. 52, p. 66-70, fig. 16-18. December 31, 1922.

U. S. Dept. Agr. Circ. 280, entitled "Kota Wheat," by J. Allen Clark and L. R. Waldron, was received from the Government Printing Office September 11.

The paper entitled "The Mode of Inheritance of Resistance to *Puccinia graminis* with Relation to Seed Color in Crosses between Varieties of Durum Wheat," by J. B. Harrington and O. S. Aarnøit, was published in the Journal of Agricultural Research, v. 24, no. 12, p. 979-996, 4 pl. June 23, 1923.

The article entitled "A Study of Rust Resistance in a Cross between Marquis and Kota Wheats," by H. K. Hayes and O. S. Aarnøit, was published in the Journal of Agricultural Research, v. 24, no. 12, p. 997-1012, 3 pl. June 23, 1923.

The article entitled "Biologic Forms of *Puccinia graminis* on Varieties of *Avena* spp.," by E. C. Stakman, M. N. Levine, and D. L. Bailey, was published in the Journal of Agricultural Research, v. 24, no. 12, p. 1013-1018, 4 pl. June 23, 1923 (Volume 24 was received September 15)

Farmers' Bulletin 1340, entitled "Polish and Poulard Wheats," by John H. Martin, was received from the Government Printing Office September 20.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs) (No report)

VIRGINIA

Arlington Experiment Farm, Rensslyn (J. W. Taylor) (No report)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love)
(No report)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (No report)

Agricultural Experiment Station, Baton Rouge (H. Stoneberg) (No report)

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (September 17)

During the first half of September the weather in Missouri has been somewhat cooler than usual, with plenty of rainfall. In some sections excessive rainfall has delayed plowing for wheat. The corn crop as a whole is very good and most of it is practically matured. Much corn has been cut and shocked and silo filling is about half done.

On the Station field, we have harvested most of our breeding and genetic corn. Our corn this year was better than average, though considerably damaged by chinch bugs. We have obtained, however, ample material this season on every problem which we now have under investigation in corn.

The yields of barley varieties in nursery plats on the Station field this season were as follows:

Varieties	C. I. No.	Average Yield Bu. per A.
Luth	908	27.4
Lion	923	23.5
Odessa	927	23.7
Summit	929	25.9
Trebi	936	24.6
Sandrel	937	22.0
Frankish	953	30.6
Manchuria	956	27.0
Manchuria x Champion of Vermont	959	31.4
Success	-	20.3
Odertrucker	-	24.0

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (No report)

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins) (No report)

Agricultural Experiment Station, Ames (Investigation of Crown Rust of Oats, S. M. Dietz) (No report)

Iowa State College, Ames (Barberry Eradication, J. H. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations J. R. Holbert) (No report)

Post Office Building, Urbana (Barberry Eradication, G. C. Curran) (No report)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer) (No report)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (No report)

College of Agriculture, Purdue University, La Fayette (Barberry Eradication, K. E. Beeson) (No report)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, J. W. Baringer) (No report)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) (No report)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab Investigations, J. G. Dickson) (No report)

Agricultural Experiment Station, Madison (Wheat Rosette and Take-All Investigations, H. H. McKinney) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker) (No report)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (No report)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger) (September 13) No effective rain has fallen since the last report and as a result the sorghums and broomcorns are ripening rapidly. Several showers have cooled the atmosphere somewhat. Work such as harvesting broomcorn and binding the sorghums has been going along as rapidly as possible.

Broomcorn on the Station will yield better than was expected, and some of the sorghums will make almost average yields. Reed kafir, C. I. No. 623, is showing up especially well again this season and it seems to be one of the best if not the best kafir to grow in this vicinity.

Visitors since last writing have been H. J. Clemmer, Superintendent of the Dalhart Field Station, H. N. Vinall and L. W. Kephart of the Office of Forage-Crop Investigations, S. C. Salmon, of the Kansas Agricultural College, and Mr. Warburton.

Maximum temperature for the last half of August, 93° on the 25th; minimum for same period, 50° on the 23d. Maximum temperature to date in September, 98° on the 10th and 11th; minimum temperature for the same period, 58° on the 12th. Precipitation for last half of August 0.39 inch, which occurred in 4 showers; precipitation for September to date, 0.10 inch.

KANSAS

Agricultural Experiment Station, Manhattan (J. H. Parker) (No report)

Hays Branch Experiment Station, Hays (A. F. Swanson) (No report)

COLORADO

Akron Field Station, Akron (F. A. Coffman) (September 15) The first half of September was comparatively cool and dry, although two showers heavy enough to be of some value were received during the period. As there was so little precipitation in August the value of these showers was not great. In this immediate section the soil is practically as dry as it was a year ago. In some localities in this part of the State sufficient rain fell, however, to be of great value to wheat already emerged and that recently sown.

During the past two weeks farm operations have progressed rapidly on the Station farm. Corn cutting has been completed and the pit silo has been filled. The seeding of winter wheat is well under way. Approximately half of the winter nursery has been sown. The seeding of experimental plots, with the exception of the date-of-seeding experiments, probably will be finished by the end of next week. The August seeding of the rate-date experiment with Kanred is practically almost completely lost on fallow. It emerged only to be destroyed by grasshoppers. What escaped the hoppers has dried out. The same date-of-seeding on corn ground did not emerge as fully because of the dry condition of the soil. The September 3 seedings in the same experiment are emerging to good stands on fallow, but the soil is still too dry on the corn ground to bring the wheat up. Unless moisture is received shortly the September 3 seeding on fallow may suffer the same fate as the August sown wheat. The early September sown wheat in the nursery furrow drill experiment has emerged to some extent.

Sorghums on the Station are rapidly reaching maturity. The dry weather has decreased the prospects for the sorghums very materially. Some of the selections of grain sorghum continue to show promise. Considerable selection and isolation will be necessary to purify these selections.

The early maturing strains of corn in the breeding plat have been harvested and the ears placed on a drying rack in the seed room over the machine shed. The later maturing selections probably will be harvested within the next 10 days. Notes are being taken on the individual selfed stalks and on the parent rows as the ears are harvested. The corn in the varietal experiment is rapidly maturing. This probably will be harvested within the month.

On September 10 the writer left Akron for Ft. Collins, Colo. The work of the State experiment station at that place was inspected on September 11. In company with E. A. Lungren, State leader of barberry eradication, and B. J. Thornton, assistant State leader, a trip was made by auto from Ft. Collins to Pueblo and from there east to Lamar. The crops in the irrigated section near the mountains and in the Arkansas River valley from Pueblo to Lamar were very good. The crops around Ft. Collins, Loveland, and Longmont were especially good.

After leaving Lamar we traveled south for more than 125 miles. This section has suffered severely from drought. As it is a dry-farmed section sorghum and corn are the chief crops grown. A few fields of wheat were seen, all of which were badly rusted. Most fields of wheat made very low yields and many were never harvested. The broomcorn crop in the section between Lamar and the Oklahoma Panhandle is very light this year. Much of it will not produce more than 100 to 150 pounds of brush to the acre. Farmers in the Oklahoma Panhandle^{and} in the northern part of the Texas Panhandle who were interviewed appear to have become discouraged. Some are leaving the country.

In some localities the rains have been more favorable than in others. Some very good fields of Sumac, Sorgo, Feterita, milo, and kafir were seen between Texhoma, Texas, and Elkhart, Kansas. West of this, however, the crops are exceedingly poor.

Most of the section north of Elkart, Kans., is purely a grazing country. The few scattering farmed areas have produced very little this year. The few fields of wheat and barley that were sown were not worth harvesting. Rust was found wherever small grains were found.

North of Holly, Colo., the crops showed a gradual improvement. Holly is located in an irrigated section in which alfalfa is an important crop. About 4 or 5 miles north of Holly the country is dry-farmed. Sorghum, corn, and broomcorn in the section between Holly and Sheridan Lake, Colo., generally were much better than in the country to the south of Holly. Some excellent fields of these crops were observed. The wheat in this section was much better than in that further south, but rust had damaged the crop to a considerable extent.

From Sheridan Lake north very good crops of corn, sorghums, and broomcorn were seen. This section has received more than the average rainfall. The Cheyenne Wells experiment farm of the Colorado Agricultural College was visited. Crops around Cheyenne Wells are probably above the average for the section.

In the territory between Cheyenne Wells and Burlington and between Burlington and Wray the corn and sorghum crops are excellent. Many fields of corn in this section probably will yield from 40 to 50 bushels while some of the fields of sorgho will produce more than 3 tons to the acre. The winter wheat in this section was much better than in any other section traversed on the trip. Fall rains had been received and the wheat was emerging to excellent stands. The past years crop was mostly threshed, but it could be easily seen that the rust epidemic in eastern Colorado was general from Wray south to the State line and from there on south into the Texas Panhandle. Specimens of rusted straw in the different sections were obtained for study of biologic forms.

The writer reached Akron Friday evening after having traveled nearly 900 miles in $3\frac{1}{2}$ days by auto over much territory that would not be possible to see in so short a time in any other way.

Boyd R. Churchill who has assisted in the cereal experiments at the Station since June 1, left September 15 for Manhattan, Kans., to resume his studies at the Kansas State Agricultural College.

Agricultural College, Fort Collins (Barberry Eradication, E. A. Lungren) (September 16) A resurvey of Weld, Larimer, and Jefferson counties was made in August. At Golden a large hedge was seen that had been treated with salt early in the season. Apparently most of the bushes were dead and only two sprouts were found. Several seedlings had developed since the treatment.

Dr. F. E. Kempton and D. G. Fletcher accompanied the State leader on an inspection trip August 25 to the most important areas of escapes of northern Colorado. A few seedlings were found at different places, indicating the necessity of careful inspection of such areas for several years.

On September 3, N. F. Thompson and the State leader made interesting and valuable notes on the chemically treated areas in the vicinity of Fort Collins.

Rust observations 1923

June 22. - Rust found spreading from barberry at Yuma, Colo., probable date of infection, June 10.

June 24. - Spotted rust conditions were found south of Burlington and around Cheyenne Wells. At this time no rust could be found 20 miles west of these towns.



July 13. - Rust in the localities mentioned above had developed to a prevalence of 100 per cent and a severity of 50 to 75 per cent. The fields near Yuma, where the infected bush had been found, showed a prevalence of 100 per cent and a severity of 75 per cent.

July 15.- Only a trace of rust, as far west as Colorado Springs.

July 19. - General spotted rust conditions were found on spring wheat in Larimer County. Severity in these spots varied from 75 to 90 per cent, according to C. D. Learn, assistant botanist of the State Agricultural College.

July 30. - A general spread existed in the spring wheat area; prevalence varied from slight to 100 per cent; severity from 25 to 50 per cent.

Aug. 4. - Wheat still in the fields at Cheyenne Wells, Burlington, and Yuma. Most of the fields showed a rust prevalence of 100 per cent, with a severity of 75 to 100 per cent.

The firstaecia appeared May 26 on barberry sprouts near Loveland in Larimer County. An infected escape was found spreading rust to Agropyron smithii in Larimer County, on June 29, probable date of infection June 10. No rust on nearest grain field $\frac{1}{4}$ mile distant.

Aug. 10. - Nature spring wheat in Larimer, Weld, and Boulder counties showed in general a 100 per cent prevalence with a 25 to 50 per cent severity.

Susceptible grasses

Hordeum jubatum, - Very susceptible in all localities.

Agropyron spp. - Very susceptible in some localities and not susceptible in others.

Elymus spp. - Same as Agropyron.

(September 13) A resurvey for sprouting barberry bushes in Denver is now in progress and will clean up the area east of the Rocky Mountains. Most of the bushes found originally on city properties are cut. Large hedges in the country have been cut down and salt has been applied to these as well as to individual bushes on farms and town properties. The resurvey indicates the success of chemical eradication without noticeable injurious effect on the soil, for vegetation is coming in where salt was applied in the summer of 1922. This is especially true in the irrigated section.

Last week F. A. Coffman, of the Akron Field Station, accompanied the writer on a trip in southern and eastern Colorado. Specimens of rusted grains and grasses were collected in different localities.

Grain crops were rather scarce in Baca County. The information obtained from that section indicated very little rust this year.

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel) (No report)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, R. U. Cotter) (No report)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, L. D. Hutton) (No report)

Belle Fourche Experiment Farm, Newell. O. R. Mathews, Superintendent, reports the following average yields of flax grown in triplicate 50th-acre plats under irrigation in 1923:

Variety	C.I.No.	Bu. per acre	Wt. per bu. Lbs.
N. D. R. No. 114	13	8.6	56
Primost	12	7.6	55
N. D. R. No. 52	8	7.2	55
Dumont	3	6.3	53

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)
(No report)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Maycue) (Report July 20 to August 20) In the period from July 20 to August 20, resurvey of Pembina, Walsh, Grand Forks, Griggs, Steele, Traill, Cass, and Richland counties, in the eastern valley section, was completed. About August 20, 34 field assistants discontinued resurvey and moved to the extreme western portion of the State to complete the original survey. A summary of the resurvey work in the eastern part of the State shows that 1,150 bushes have been found and destroyed on 33 properties. Many demonstrations have been held at these new findings, and the relationship of the common barberry to black stem rust has been clearly shown. Exhibits have been placed in many prominent show windows, and bankers have cooperated heartily in helping to make these possible.

Publicity in the daily and weekly newspapers of the State has been pushed. Editors have shown a willingness to cooperate and have been anxious to receive educational material and to promote a thorough campaign. Publicity is being especially stressed in the counties where original survey is now being carried on. By personal contact with the farmers it is possible to determine the questions that should be made clear and our newspaper stories are arranged accordingly.

On completion of the present ^{survey} the men will move to the counties in the southwestern portion of the State. The survey in the western areas will not progress so rapidly as in the east, because of the hilly country and lack of good roads. It is often impossible to follow section lines and it is necessary to locate farms in certain townships by means of a list.

Dickinson Substation, Dickinson (R. W. Smith) (September 17) Threshing operations in this locality were interrupted by a rain of 0.52 inch on September 16. Previous to this there had been only light showers at wide intervals during the past month. Fall-sown grain had not yet germinated but germination is now assured.

Threshing at the Substation is completed, with the exception of the nursery and the date-of-seeding flax experiment.

The varieties of flint corn have been husked and the dent varieties will be husked in a few days. The former were well ripened except Rainbow flint, which was left to mature along with the dent varieties. The early varieties of the latter are fairly well matured. The first killing frost of the season occurred on September 13, with a minimum temperature of 30 degrees. The corn was badly frosted and the late varieties will not mature normally.

Preliminary weights of the flint varieties husked indicate that some of them will yield over 50 bushels of air-dry corn to the acre. The corn crop in this County is very good this year, some excellent corn being exhibited at the Stark County Fair at Dickinson and also at the Dunn County Fair at Killdeer. The acreage of corn next year doubtless will be increased, insuring a better crop rotation and better yields of small grain when sown on corn land.

Fall seeding at the Substation is completed except increase grain. Very little fall seeding has been done in this County. Considerable threshing remains to be done.

The maximum temperature for the year was 98 degrees September 3. The frost-free period was 120 days, from May 16 to September 13. This is slightly more than a week longer than usual.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.)
(September 17) The first half of September generally was warm and dry.

The uniform winter wheat nursery was sown September 6 immediately following a rainfall of 0.47 in. September 5. The wheat emerged September 13 to good stands.

The plats sown June 15 in the flax date-of-seeding-and-tillage experiment were harvested September 13. Harvesting of the flax nursery rows was completed September 15.

Maximum temperature for the first half of September, 95° on Sept. 3; minimum 33°, on September 12; precipitation, 0.55 in. A light frost on the night of September 12 killed a few tender species in the vegetable garden.

MONTANA

Judith Basin Substation, Moccasin (R. W. May) (September 15) Fair weather since the first of the month has been very favorable for field work. All harvesting on the Substation has been completed except the flax nursery and the corn under the cereal project. No threshing has been done except a small field of Karmont wheat for increase and the winter wheat nursery. The entire winter wheat nursery has been sown and over half of it has since emerged. The sowing of the winter wheat varieties must be delayed until help and teams are available for threshing this season's crop. The furrow drill experiments can be sown just as soon as a team becomes available.

Frosts sufficiently heavy to stop the growth of corn occurred September 11 and 12. This will necessitate harvesting the corn just as soon as a team is available. Counts of the number of plants, number of suckers, and number of ears per row of corn under the cereal project were completed this morning. All of the corn on the rotation plats and in the commercial field has been harvested.

Threshing is in progress throughout the Judith Basin. In many instances the yields of winter wheat are disappointingly low, while the yields of spring wheat on the other hand are high. Winter wheat this year contains considerable stinking smut. There was a greater prevalence of rust this season than in any other year since the Substation was established in 1908.

State College of Agriculture, Bozeman (Barberry Eradication, W. N. Christopher) (No report)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe) (No report)

Agricultural Experiment Station, Moscow (Stripe Rust Investigations, C. W. Hungerford) (No report)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (No report)

CALIFORNIA

Biggs Rice Field Station, Biggs, (J. W. Jones) (September 15) The weather during the first half of September has been very favorable for blooming and filling of rice. All our early and midseason varieties are now ripening.

We stopped taking water on practically all plats at the Station September 15. If the weather continues favorable nearly all plats will be drained by September 22 and harvest should start about October 1.

Most of the commercial growers have stopped taking water, and with seasonable weather will begin harvesting the first week in October.

On a trip to the west side of the Sacramento River last Friday, fields sown to early varieties (1600 and Onsen) were seen that were drained, while some were already harvested and one thresher was in operation. East of Colusa and the Sacramento River we saw several rice fields that had recently been abandoned because of the thick growth of water grass. These fields were being used for pasture.

About 50 people attended the demonstration at the State Rice Station at Cortena on September 14. At the demonstration I briefly outlined the work which is being done at the Biggs Station.

University Farm, Davis (V. H. Florell) (September 15) Notwithstanding unfavorable weather conditions early in the spring very satisfactory yields of grain were produced. The yields reported represent actual yields of 50th-acre plats, except in a few plats of barley where corrections were necessary on account of gopher or other injury, and are shown in the following tables:

Yields of varieties of wheat grown in fiftieth-acre plats, replicated 5 times at University Farm, Davis Calif., 1923.

Variety	C.I.No.	Av.yield bu.per acre.	Variety	C.I.No.	Av.yield bu.per acre
Pilcrow	5540	74.5	Bunyip	5125	52.7
Federation	4734	73.5	Linn	6346	55.5
Jenkin	5177	71.5	Sonora	3622	54.8
Onas	6221	70.8	Marquis	4153	54.3
Ouderbaard		70.5	White Australian Sel.	40W	54.2
Little Club	4066	67.2	White Odessa	4655	54.2
Hard Federation	4733	65.3	Baart	1697	53.5
Boadicea	6220	65.3	Canadian Red	6282	53.0
Kharkov	1442	61.2	Bobs	4710	51.5
White Federation	4961	60.5	Early Defiance	K.P.	46.5
Pacific Bluestem	4067	59.2	Sunset	Cal.3015	45.8

Yields of varieties of barley grown in fiftieth-acre plats replicated 4 times at University Farm, Davis, Calif., 1923.

Variety	C.I.No.	Av.yield bu.per acre.	Variety	C.I.No.	Av. yield bu.per acre
Cape X Coast Hybrid	11	124.6	Coast	690	103.2
Cape X Coast Hybrid	7	116.5	Tennessee Winter	257	102.9
Coast Sel	276B	112.5	"4000"	Cal. 4000	101.8
Cape X Coast Hybrid	15	112.0	Arequipa	1256	101.5
Coast Sel	190B	111.5	California Mariout Sel.	Cal. 2296	100.6
Club Mariout	261	110.7		361B	96.4
Mariout Sel. (K.P)	(2275)	108.9	Coast Sel.		
Coast Sel	40B	108.4	California Mariout Sel.	Cal. 2292	94.6
Kopeck	869	108.1		936	93.8
Coast Sel.	263B	106.8	Trebi	--	93.0
Hero (H-6)	1286	111.5	Baldy Mesa		
California Mariout					
	Cal. 2241	104.5	Smyrna	195	85.2
Coast Sel.	45B	104.5	Nepal	--	75.0
			Chevalier	276	74.8
			Peacock	Cal. 2245	74.8

Yields of varieties of oats grown in fiftieth-acre plats replicated 5 times at University Farm, Davis, Calif., 1923

Variety	C.I.No.	Av.yield bu. per acre.
Guyra	2034	139.9
Fulghum	776	139.3
Burt	1797	109.3

The condition of the plat experiments this year was very satisfactory. Stands were very uniform with soil fairly uniform over the area. While the old Ellis-Keystone thresher was not all that could be desired the threshing was accomplished with fairly good results.

The most striking yield obtained during the season was that of the Cape X Coast barley hybrid. This is one of Professor Mackie's hybrids. It is a very fine looking barley and is apparently homozygous. The grain is of very good quality except that perhaps it is a little dark in color. Other desirable qualities are its resistance to shattering and lodging. It is also said to be resistant to *Rhynchosporium*. It matures late, Earlier maturity would be desirable. One of the Coast selections from those grown at Chico is also among the high yielding barleys.

Fulghum oats are also showing up very well and are appreciated at Davis.

Agricultural Experiment Station, Berkeley (F. N. Briggs) (No report).

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations.
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15

September 30, 1923

No. 24

Personnel (September 21-30) and Project Issue.

PERSONNEL ITEMS

Miss Nellie M. Keller, stenographer and typewriter, resigned her position August 18.

C. W. Warburton, formerly agronomist in charge of cereal agronomy investigations, was appointed by the Secretary of Agriculture as Director of Extension Work, effective September 24.

The following appointments have been made in the barberry eradication service since September 1, 1923:

Indiana: Harold R. Holcomb; Iowa: Clare M. Bissell, John B. Dodge, Vern A. Langmaid, and John M. Steddom; Michigan: Herbert H. Birch, James L. Boyd, Gerald E. Mallory, and Walter A. Steketee; South Dakota: Lawrence C. Sayre.

Resignations of assistants in barberry eradication since August 15 have been as follows:

Illinois: Luther A. Black, Earl D. Cornwell, Virgil B. Fielder, Edwin D. Griffin, Atlee L. Hafenrichter, Joseph B. Hawkes, Lyle J. Hayden, Wendell S. Muncie, Clifford F. Reid, Prentiss E. Reid, Orton K. Stark, George F. Sullivan, and Otis B. Young; Indiana: Lawrence L. Braybrook, Henry M. Burlage, Walter M. Cross, Lawrence A. Dougherty, Virgil R. Emerson, Roy L. Fosbrink, Verne C. Freeman, Charles D. Goodale, Wilbur F. Graham, Albert W. Heine, Walter E. Heller, Wayne E. Leer, Glenn H. McKenzie, C. Mervin Palmer, Ralph H. Rogers, Bruce V. Worth, and Reginald B. Zumstein; Iowa: Lysle D. Leach, Arthur G. Lemcox, and Henry F. A. North; Michigan: Vivian J. Hultman and Sigurd T. Mathieson; Minnesota: Jefferson S. Benner and John H. Craigie; Montana: John C. Paugh; Nebraska: Ralph H. Cole, Benjamin F. Dittus, B. W. Hunt, Leon G. Samsel, and Lawrence A. Schaal; Ohio: Carl W. Aneshansel, Harry Atwood, Earl K. Dobbins, Cloyce L. Parish, Phillip O. Wagner, and Orville T. Wilson; South Dakota: Abner J. Britson, Raymond O. Bulger, Ralph M. Caldwell, Frank Coffey, Jasper S. Fairchild, Francis F. Fish, Earl Gannon, Augustus T. Haines, Albert T. Hume, Paul M. Hutton, Elvin H. Korstad, Courtney W. Larson, George T. Malmer, Harry A. Mateer, Kirk T. Mears, John W. Moore, Arthur E. Mortensen, Bernard Murray, Joe F. Murray, Clarence H. Schutte, G. H. Starr and Earl I. Welch; Wisconsin: George K. Davis, Harry L. Edwards, Samuel S. Feldman, George A. Fiedler, Carter M. Harrison, Earle F. Holt, Daniel O. Horne, George W. Horton, Leonard J. Kaasa, Joseph G. Kempton, Villiers W. Melocne, Eugene J. Rankin, Hugh R. Stiles, Ralph B. Wackman, and Alfred M. Wolfson.

The appointment of Ordia A. Plunkett, field assistant in barberry eradication in Illinois since July 2, was terminated September 16; Mr. Plunkett was immediately reappointed as collaborator with the Plant Disease Survey at \$1.00 per annum.

VISITORS.

C. C. Taylor, of Messrs. Patterson and Taylor, "Serpentine," Victoria, Australia, was an Office visitor September 25. He is making a tour of the United States, Argentina, and South Africa to study crops and methods of crop production. After leaving Washington Mr. Taylor expected to sail for the Argentine.

MANUSCRIPTS AND PUBLICATIONS.

A paper entitled "The Black-Bundle Disease of Corn," by Charles S. Reday and James R. Hilgart, was transmitted September 12 for publication in the Journal of Agricultural Research.

Galley proof of article entitled "Specialized Varieties of Puccinia glumarum and hosts for variety Tritici," by Chas. W. Hangerford and C. E. Owens, for publication in the Journal of Agricultural Research, was read September 27.

An article entitled "The Occurrence of Polypeptides and Free Amino Acids in the Ungermminated Wheat Kernel," by S. L. Jodidi and K. S. Markley, was published in The Journal of the American Chemical Society, v. 45, no. 9. September, 1923.

Department Bulletin 1175, entitled "Grain Sorghum Experiments at the Woodward Field Station in Oklahoma, " by John B. Sieglinger, was received from the Government Printing Office September 27.

The article entitled "Eradication of Common Barberry and Black Stem Rust in Ohio," by John W. Baringer and Wilmer G. Stever, has been published as a bulletin of the Ohio State University Agricultural College Extension Service, v. 15, no. 13, 16 p., 6 fig. 1923. (In Cooperation with U. S. Department of Agriculture)

CLYDE W. WARBURTON: AN APPRECIATION.

The Office of Cereal Investigations has suffered a great loss in the transfer of Mr. Warburton, consequent to his promotion to the position of Director of Extension for the Department. The Department as a whole gains in proportion. The writer has been associated with Mr. Warburton in the work of the Department for twenty years. During much of this period the association has been very intimate. Never once, in all that time, has he been found lacking in those qualities of courtesy, appreciation, judgment, energy, and initiative, which are so fully required in persons charged with conducting and administering scientific investigation in the Department of Agriculture. His tasks oftentimes have been heavy, but he has always carried them through to completion. Discouragements at times have been his lot, but always he has kept a smiling face and an even temper. Special details requiring tact and skill have been numerous, but he has handled every situation with satisfaction to the constituents he served and the administrative officers under whom he has worked. Such qualities merit recognition, and his many friends, coextensive with his acquaintances, will wish him the most abundant success in his new and more important position.

Mr. Warburton was born at Independence, Ia., on December 7, 1879. He graduated from the Iowa State College with the degree of B. S. in Agr. in 1902. In 1903 he entered the then Office of Farm Management of this Department as scientific aid, and from 1904 to 1906 was scientific assistant in charge of the diversification farm work in Texas. From 1907 to 1910, he was agronomist in oat investigations in the Office of Cereal Investigations. In December, 1910, he resigned from the Department service to become associate editor of "The Farmer" and editor of the Book Department of the Webb Publishing Company at St. Paul. In June, 1912, he returned to the Office of Cereal Investigations as agronomist in charge of oat investigations, which position he held until the end of 1922. When the writer became Cereal-ist in Charge in April, 1918, Mr. Warburton was placed in charge of the agronomic division of the Office of Cereal Investigations, but during much of the next three years he was absent from Washington on special details by the Secretary of Agriculture. In 1921 he was officially designated as Agronomist in Charge of Cereal Agronomy Investigations, and thenceforward gave practically all of his time to administrative duties.

The special details to which Mr. Warburton was assigned included some very important lines of service. On January 1, 1918, he was dispatched as a representative of the Federal Seed Stocks Committee to purchase seed of oats and barley at Minneapolis, to meet emergency conditions resulting from severe drought in North Dakota and Montana. This work continued for four months, and was followed by a detail to purchase seed corn to meet emergency conditions in Iowa and Illinois caused by the injury of seed corn by early frost in 1917.

In August, 1918, he was detailed to Great Falls, Mont., to act as the Department's representative in the placing of seed-grain loans in North Dakota, Montana, and Washington, in cooperation with the Federal Farm Loan Board, in which work he continued until September, 1919. In the spring of 1921, and again in the spring of 1922, he supervised the making of seed loans in the spring-wheat States, loaning nearly \$2,000,000 in 1921 and \$1,500,000 in 1922. He spent two months in the field in the fall of 1921, supervising seed loan collections, and has continued to give administrative supervision to the collection activities since that time. Since January 1, 1923, he has been Acting Chairman of the Department's Advisory Committee on Seed Grain Loans.

Carleton R. Ball,
Cerealist in Charge

September 30, 1923.

1. The first part of the paper discusses the importance of the study of the history of the United States. It is argued that a knowledge of the past is essential for a full understanding of the present and for the development of a sound policy for the future. The author points out that the study of history is not only a means of acquiring knowledge, but also a means of developing a sense of responsibility and a sense of civic duty.

2. The second part of the paper discusses the importance of the study of the history of the United States. It is argued that a knowledge of the past is essential for a full understanding of the present and for the development of a sound policy for the future. The author points out that the study of history is not only a means of acquiring knowledge, but also a means of developing a sense of responsibility and a sense of civic duty.

3. The third part of the paper discusses the importance of the study of the history of the United States. It is argued that a knowledge of the past is essential for a full understanding of the present and for the development of a sound policy for the future. The author points out that the study of history is not only a means of acquiring knowledge, but also a means of developing a sense of responsibility and a sense of civic duty.

Attention is called to the following memorandum for letter 3-31-35 from the Chief of the Bureau of Plant Industry:

MEMORANDUM FOR HEADS OF OFFICES.

Gentlemen:

Our particular attention has been called to the large amount of noncompetitive purchases made by the Bureau and particularly by the field stations. The same is very considerably augmented by large individual purchases, such as tractors and other comparable equipment, obtained without competition.

It is recognized that many of our field stations are isolated with frequently only a single dealer of a line of equipment within reach. Also frequently through a breakage of equipment or other development of an unforeseen situation, the immediate purchase of supplies or equipment is necessary in order to safeguard the work of the Bureau. While those of us in close touch with the work fully appreciate the situation, we must bear in mind that the reimbursements are handled by a large number of individuals out of touch with our work, and unfamiliar generally with agricultural conditions, and who must rely entirely upon the information submitted with the voucher.

It is believed that a considerable part of this apparent noncompetitive purchase is in fact made with informal competition, and it is further thought that with a little effort this competition can be documented without unfairly delaying the purchases. Where the purchase of a piece of equipment is decided upon, it would be desirable to prepare the specifications on the standard form used in obtaining bids, take these forms direct to the dealers, obtain the bids, place the order if it is clear that you cannot wait to have the bids acted upon at Washington, and submit these informal bids with your exigency statement when forwarding voucher. The Department will also act upon telegraphic recommendations to be confirmed later by forwarding the bids.

Where the time element or other circumstances are of such importance as to make any of the foregoing methods impracticable it will of course be necessary to rely upon the exigency statement. An exigency statement should show the situation clearly so that an unbiased, uninformed individual may thoroughly appreciate the circumstances. It must also clearly be shown that the exigency is in fact an unforeseen emergency, and not a condition which could reasonably have been foreseen.

It is not intended that the foregoing shall apply to the urgent purchase of small lots of supplies or equipment not in excess of fifty dollars. However, orders should never be split in order to bring each purchase within the fifty dollar limit. Where any economic advantage may be obtained without undue inconvenience through the purchase in larger lots of supplies that will be needed through the year it should be done.

Your hearty cooperation is requested.

Very truly yours,

Mr. A. Taylor
Chief of Bureau.

EXTRA CARBON OF D. P. I. MANUSCRIPTS NEEDED.

Please note carefully the request in the second paragraph of the subjoined memorandum from the Chief of the Bureau.

In accordance therewith, an extra carbon copy should be supplied with each manuscript submitted for publication as a Department Bulletin or Circular or a Farmers' Bulletin. This does not apply to manuscripts for the Journal of Agricultural Research.

Sincerely yours,

C. R. Ball,
Cerealist in Charge.

D.P.I. Memo. No. 22.

Washington, D. C.

September 24, 1923.

MEMORANDUM FOR HEADS OF OFFICES.

Gentlemen:

The Acting Assistant in Charge of Publications, Mr. L. J. Haynes, calls attention to the importance of complying with Section 3, Paragraph 168, of the Administrative Regulations, which calls for the return of manuscripts within three days when such are referred to the Bureau for examination. He states that in some cases manuscripts in this stage have been held by Bureau from one to three weeks, and as from three to five Bureaus commonly ask to read the same manuscript very material delay in the forwarding of the manuscripts to the Printer has frequently occurred.

With a view to shortening the time required for consideration of such manuscripts, it is requested that a carbon copy of each manuscript typewritten hereafter be furnished. This will make possible simultaneous circulation and reading, both within the Bureau and in its handling by the Division of Publications. In case the furnishing of a corrected carbon copy of any manuscript is considered impracticable the matter should be promptly brought to the attention of this office, as we desire to cooperate effectively with the Division of Publications in their effort to expedite the handling of manuscripts and proofs.

Very truly yours,

Wm. A. Taylor,
Chief of Bureau.

PROJECT REPORTS

WESTERN WHEAT INVESTIGATIONS.

(J. Allen Clark, Agronomist in Charge)

New Varieties of Wheat.

The classification of American wheat varieties has been available in published form less than a year, but already several new varieties of wheat are being commercialized which are not discussed in the classification. The Committee on Varietal Standardization of the American Society of Agronomy is planning to cooperate with the Bureau of Plant Industry through this Office in registering all new varieties of these crops for which classifications have been accepted by the Society. These now included wheat, oats, and barley. Only additional varieties which are of high performance or of plant breeding importance are to be eligible for registration.

The origin of new varieties may be from three sources, viz., hybridization, selection, or introduction. Varieties of wheat which have been developed by these different methods and are now being commercialized, but which are not included in the published classification are described below.

Varieties Developed from Hybridization.

Ridit. This is a winter wheat that is resistant to bunt or stinking smut developed in Washington by the Washington Agricultural Experiment Station in cooperation with this Office. The wheat was bred by Dr. E. F. Gaines by crossing Turkey and Florence, the latter being a smut resistant spring wheat introduced from Australia. The new wheat was first grown as a pure strain in 1919 and has since been tested and increased by the Washington Agricultural Experiment Station at Pullman. It recently has been named Ridit. Doctor Gaines reports that the name was worked out with Doctor Potter, Associate Professor of Latin, and the name Ridit, in addition to suggesting to the popular mind the idea of ridding the country of smut, represents the initial letters of the latin words, rurum, inberbe, durum, infuliginosum, and triticum, which mean a red beardless hard smutless wheat. Seven yield tests have been made with this new wheat at Pullman, which include 3 years in the nursery and 2 years in plots. The average yield for the 7 tests is 41.2 bushels an acre. During the same period and in the same tests the two leading winter wheats of Washington, Hybrid 120 and Turkey, produced 42.4 and 42.1 bushels per acre respectively. Each year at Pullman seed of Ridit wheat has been rolled in smut to obtain maximum infection. Under these conditions the variety has averaged only one-tenth of one per cent infection, while the commercial varieties grown in comparison have been nearly destroyed by smut. The Washington station is now distributing seed of the new variety in one pound lots to hundreds of farmers who are anxious to get a start with a productive wheat that does not smut.

Idaho. The Mosila variety has been developed by the Idaho Agricultural Experiment Station at Moscow, Idaho, as the name indicates. It resulted from a cross of Fultz-Mediterranean and Turkey made at the Colorado Agricultural Experiment Station. The Mosila has been the highest yielding winter wheat at Moscow, Idaho, covering experiments of 5 years, and in plot experiments at the Sherman County Branch Station, this past season it was the highest-yielding winter variety grown. The Idaho station is distributing small quantities of this new wheat this fall.

Perisly Rock. This winter wheat was developed at the Michigan Agricultural Experiment Station from a cross between a Turkey wheat locally known as Berkeley and Red Rock. The variety has been a high-yielding wheat in experiments at East Lansing, and is being rapidly commercialized by the Michigan Crop Improvement Association.

Michikaff. This variety was developed at the Indiana Agricultural Experiment Station from a cross between Michigan Amber and Malakof. It is a high-yielding, awnless, glabrous, white-glumed, semihard, red-kernelled wheat, which has been distributed commercially by the Indiana station for two seasons.

Varieties Developed by Selection.

Karmont. This hard red winter wheat has been developed in cooperative experiments by this Office and the Montana Agricultural Experiment Station at the Judith Basin Substation, Moccasin, Mont., as a selection from Zharkof, C. I. No. 133. The selection was made in 1911 by E. L. Adams, from the variety which has since proved the best yielding wheat at Moccasin during a 14-year period. The selection now known as Karmont has been grown in field plats since 1913, and has exceeded the yield of the parent by ten per cent in a 5-year period. The Judith Basin Substation and the Montana Agricultural Experiment Station at Bozeman have been increasing Karmont wheat for two seasons and seed for several thousand acres of the variety will be available for seeding in that State this fall.

Nodak. This durum variety was developed at the Dickinson Substation from cooperative experiments conducted by this Office and the North Dakota Agricultural Experiment Station. This wheat was formerly known as Kibanka No. 98, and has proved the best of 144 selections from Kibanka C. I. 1440, made at the Dickinson Substation by R. W. Smith in 1914. The Nodak has been grown in field plats at Dickinson Substation since 1913, and during the 6-year period has out-yielded all other varieties of durum and hard red spring wheat. Seed of the variety has been increased at the Dickinson Substation for two seasons and about 200 acres of the new variety were grown commercially in the past year.

Iobred. Iobred has been developed at the Iowa Agricultural Experiment Station as a selection from Banat. It was formerly known as Iowa 1949, but recently has been named Iobred. It is an awred, glabrous, brown-glumed variety of hard red winter wheat. The variety was increased at the Iowa station during the past year and the seed is being distributed commercially this fall.

Fulbio. This is a new variety developed as a selection from Fultz at the Ohio Agricultural Experiment Station, Wooster, Ohio. The selection was made in 1912 and seed of the variety is now being distributed by the Ohio Station.

Shepherd. This wheat was developed by Dr. C. E. Leighty at Arlington Experiment Farm from a head selection made in 1911 from a wheat known as Shepherd's Tennessee Fultz. Shepherd is an awnless glabrous, brown-glumed variety of soft red winter wheat which has proved resistant to flag smut and rosette. About 6 acres of this wheat were grown in 1923 near Granite City, Ill., and 100 bushels of the grain produced were purchased by the Illinois State Department of Agriculture for increase and distribution in the areas where flag smut and rosette are prevalent.

Sherman. This is a selection of Crimean wheat made by the writer at the Judith Basin Substation, Judith Basin, Mont., in 1915. It has proved one of the most promising of the wheats determined to be smut-immune or smut-resistant in cooperative experiments at the Sherman County Branch Station, Moro, Oreg. Seed of this variety has been increased at the Moro station, and is being tested by county agents in several sections of the State of Oregon before being generally distributed for commercial growing.

Most of the varieties of wheat discussed above have been satisfactorily named in accordance with the code of nomenclature adopted by the American Society of Agronomy. There are some new varieties of wheat, however, which are being distributed under station numbers. It is hoped that through registration of all new varieties the commercializing of new varieties under State numbers or unsatisfactory names will be prevented. The following are varieties now being commercialized under State numbers.

Pennsylvania No. 40. This is a selection of the Fulcaster variety developed at the Pennsylvania Agricultural Experiment Station, which has been grown in Pennsylvania for at least two seasons and which has met with phenomenal success in that State.

Illinois 10-110. This is a selection of Turkey developed at the Illinois Agricultural Experiment Station, which has been distributed for commercial growing in Illinois during the past two seasons.

Ohio 9920. This is a pure-line selection of pools selected at Wooster, Ohio, in 1909, which is being commercialized by the Ohio station. It is to be hoped that a desirable name will be selected for this additional variety before it is commercialized further. Such desirable names as Trumbull, Portage, and Gladden have been given to other wheats developed on this Station.

Variety obtained by Introduction.

Onas. This wheat was introduced from Australia (S. P. I. No. 46796) in 1913 by the U. S. Department of Agriculture, the seed having been bred and grown by F. Coleman, Tuala, Saddleworth, S. Australia. The variety was produced from a cross having Federation as one parent. Onas is a white spring wheat and has proved a high yielder and one excellently well adapted for bread-making, from cooperative experiments at the California Agricultural Experiment Station at Davis. About a 3-acre increase field was grown at the Davis station during the past season, which yielded slightly more than 110 bushels per acre. The variety will be commercialized by the California station this fall.

RESULTS OF EXPERIMENTS ON BUNT PREVENTION AT MORE, OREGON, 1923.

Snut, D. E. STEPHENS, Snohomish Co., Branch Station.

In late years much interest has developed in an effort to discover fungicides and methods of seed treatment for the prevention of snuts that would enable the farmer to abandon the use of formaldehyde and copper sulphate. The copper sulphate and formaldehyde treatments, applied to wheat for the prevention of bunt, almost invariably injure the seed to such an extent as to make continued use of these fungicides of questionable value. Moreover, in the Pacific Northwest, where bunt infestation of the soil is so general, it is especially desirable to discover a fungicide which will prevent infection from spores present in the soil. Experiments conducted during the past year at the Snohomish Co. Branch Station, More, Oregon, involving use of a number of chemical dusts and solutions are here reported for the first time. The relative value of copper carbonate dust as a bunt preventive is clearly brought out in tables 1 to 4 inclusive.

Table No. 1. Results of Seed-treatment Experiments conducted during this crop season at Moro, Oregon, showing relative value of several fungicides as bunt preventions.

Variety	Pre- treatment	Copper- bonate	Blue- stone	Forma- lin	Corona; Con- pound No. 620	Chloro- phol	Same- san	Uspu- lun	Germi- san
<u>Fortyfold</u>									
Date emerged	1/5	12/30	1/2	1/5	1/5	12/28	12/28	1/2	12/28
Stand per cent	34.5	60.0	57.0	30.0	19.0	67.5	60.5	53.0	60.5
Smut per cent	36.2	5.3	1.2	3.4	.9	12.0	13.3	.2	.3
<u>Mybrid 123</u>									
Date emerged	1/5	12/31	1/5	1/10	1/2	1/1	12/30	1/3	12/30
Stand per cent	45.5	57.0	55.5	7.5	5.0	63.5	69.0	15.0	67.5
Smut per cent	93.6	14.7	3.5	0.0	0.0	6.6	3.9	1.9	1.2
<u>Turkey</u>									
Date emerged	1/5	1/2	1/5	1/5	1/6	1/2	12/23	12/23	1/3
Stand per cent	35.5	45.5	57.5	23.5	63.5	40.5	63.0	65.0	55.0
Smut per cent	35.9	2.4	1.2	1.1	2.0	21.7	1.3	1.7	2.0
<u>Marun x Markaf</u>									
Date emerged	1/3	1/5	1/5	1/5	12/31	1/2	12/26	1/5	1/2
Stand per cent	21.5	35.5	35.0	21.0	43.0	53.5	63.0	20.0	65.0
Smut per cent	51.1	4.7	1.2	.6	0.0	1.3	4.3	1.9	.6
<u>Average</u>									
Date emerged	1/6	1/2	1/4	1/6	1/6	12/31	12/29	1/3	1/2
Stand per cent	34.5	49.5	46.2	20.5	23.4	63.2	67.1	39.0	62.0
Smut per cent	51.8	6.9	1.9	1.3	.7	6.3	7.8	1.4	1.1

Table 2. Results of Seed-treatment experiments conducted during this crop season at Moro, Oregon, showing relative value of several fungicides as preventives of smut.

Variety	No	Copper	Blue-	Forma-	Corona	Com-	Seed-O-Sm	Coloro	Same-	Uspu-	Germi-
	Treat-	Cor-	stone	lin	round	W. 670		phl	san	lan	san
	ment	borate	and	lime	Wet	Dry	Wet	Dry			
<u>Hybrid 322</u>											
Date emerged	12/30	12/30	1/3	1/10		1/2	12/30	1/2	12/30	1/3	12/30
Stand per cent	25.0	54.0	37.5	9.5	6.0	55.5	45.0	50.0	44.5	43.0	31.5
Smut per cent	55.2	24.3	12.7	29.3	12.9	13.4	35.5	57.3	28.3	54.2	35.5
											32.4
<u>Fortyfold</u>											
Date emerged	1/2	12/30	12/30	12/30	0.0	12/30	12/30	12/30	12/30	1/2	12/30
Stand per cent	34.0	49.0	47.0	6.5	0.0	55.5	37.5	42.0	70.5	59.5	34.0
Smut per cent	70.4	18.3	14.2	28.4	0.0	17.3	62.5	50.4	30.7	66.4	41.2
											29.6
<u>Turkey</u>											
Date emerged	12/31	12/31				1/2		12/30			
Stand per cent	37.5	43.0				50.5		43.5			
Smut	25.3	21.3				2.1		30.2			

Table 3. Results obtained from experiments on different methods of treating wheat for prevention of bunt, conducted during this crop season at Moro, Oregon. Seed smutted before treatment.

Method of Treatment.	Hybrid 128				Fortyfold				Average			
	Date : : Emerged	% : : Stand	% : : Smut	Date : : Emerged	% : : Stand	% : : Smut	Date : : Emerged	% : : Stand	% : : Smut	Date : : Emerged	% : : Stand	% : : Smut
No treatment	12/31	35.0	86.7	1/2	25.0	88.5	1/1	30.0	87.6			
Copper carbonate (dry, not screened)	12/31	36.2	22.1	1/2	42.5	24.7	1/1	39.3	23.4			
Copper carbonate (dry, screened)	12/31	36.7	4.4	1/2	43.7	8.2	1/1	41.2	6.3			
Copper carbonate (damp, not screened)	12/31	42.5	12.3	1/2	42.5	11.8	1/1	42.5	12.1			
Copper carbonate (damp, screened)	12/31	42.5	9.2	1/2	42.5	7.1	1/1	42.5	8.2			
Dupont C-10-G (not screened)	12/31	40.0	64.0	12/31	42.5	74.2	12/31	41.2	69.1			
Dupont C-10-G (screened)	12/31	35.0	59.5	12/31	42.5	64.4	12/31	38.8	61.9			
Dupont C-20-G (not screened)	12/31	32.5	52.5	12/31	45.0	28.8	12/31	38.8	40.8			
Dupont C-20-G (screened)	12/31	40.0	32.0	12/31	45.0	33.4	12/31	42.5	32.7			
Dupont C-10-F (not screened)	12/31	42.5	63.2	1/2	40.0	67.7	1/1	41.2	65.5			
Dupont C-10-F (screened)	12/31	41.2	56.2	1/2	45.0	61.3	1/1	43.1	58.7			
Dupont C-20-F (not screened)	12/31	40.0	68.9	12/31	48.7	32.9	12/31	44.4	50.9			
Dupont C-20-F (screened)	12/31	40.0	40.0	12/31	45.0	34.5	12/31	42.5	37.2			

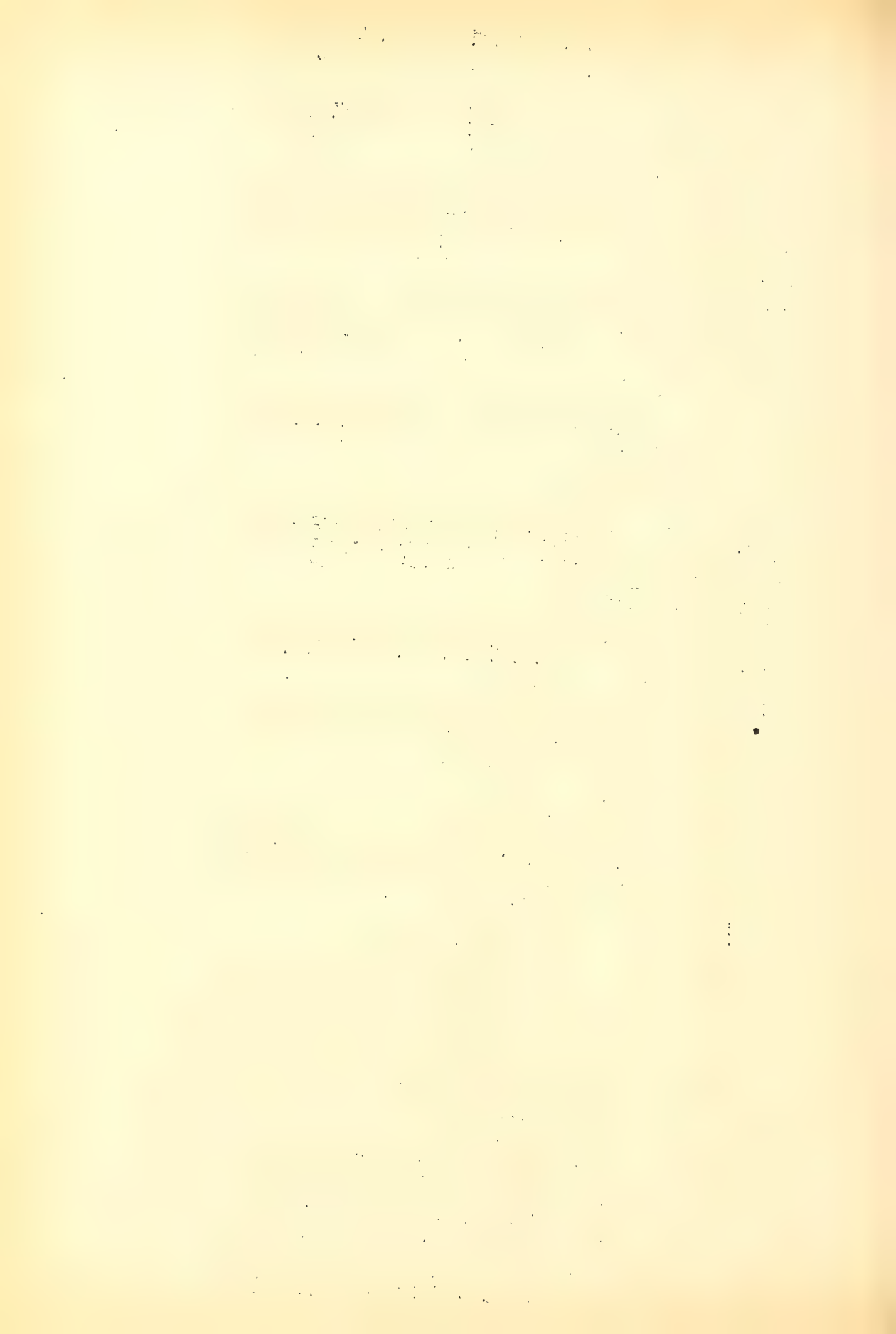


Table 4. Results of experiments on different methods of seed treatment for prevention of bunt, conducted during this crop season at More, Oregon. Wheat sown in smutted soil.

Variety and Method of Treatment	Date	Stand	Smut
	Emerged		
		per cent	per cent
<u>165B</u>			
Seed smutted - no treatment	12/31	15	49.4
Soil smutted - no seed treatment	12/31	15	25.3
Soil smutted - Copper Carbonate	12/31	15	29.3
Soil smutted - Seed-O-San	12/31	15	16.8
Soil smutted - Corona Compound No.620	12/31	25	23.5
<u>Fortyfold</u>			
Soil smutted-clean seed-no treatment	12/31	25	56.2
<u>Hybrid 125</u>			
Soil smutted-clean seed-no treatment	12/31	30	58.5

215-B-1. Stem Rust Investigations, Dr. E. C. Stakman, Pathologist in Charge.
Barberry Eradication, Dr. F. E. Kempton, Pathologist in Charge.

A Partial Report on the Susceptibility and Resistance of Berberis and Related
Genera to Stem Rust.

By E. C. Stakman and M. N. Levine.

Of the many species of Berberis, some are extremely susceptible and others are very resistant to black stem rust. Certain other varieties are practically immune. Berberis vulgaris and B. thunbergii are by far the most common forms in cultivation, but certain others are distributed to a limited extent. It seems desirable, therefore, to prepare a list including the known susceptible and resistant forms. The former are listed in Table 1, while those varieties which did not take infection from artificial inoculation are listed in Table 2. Some of the names are synonyms, and several of the species of Berberis are very poorly defined, making it almost impossible to distinguish them without knowing their ancestry. Many garden forms, a number of hybrids, and many closely related varieties are included.

Attention should be called particularly to the fact that the small trailing Mahonia (M. repens), which is so common in the mountains and foothills of the western States in the barberry eradication area, is immune from stem rust. All our attempts to infect it through artificial inoculations have failed. Neither has it been found infected with Puccinia graminis in nature. On the other hand, the tall Mahonia (M. aquifolium), is moderately susceptible. It has been infected in the greenhouse as a result of artificial inoculations, and has been found rusted under natural conditions. Furthermore, in the Kryptogamic Herbarium at Berlin there are several specimens of heavily rusted Mahonia. Not only were the berries covered with aecia, but even the leaves of some specimens were quite heavily infected. Normal infection on M. aquifolium also had been reported from Czechoslovakia.

The information relative to susceptibility given in Table 1, under the headings "Artificial and Natural Infection" and "Literature," was obtained from three distinct sources. In the column headed "Artificial Infection" are included those forms known to be susceptible as a result of artificial inoculations made in the greenhouses at University Farm, St. Paul. In the column headed "Natural Infection" are included those species and varieties on which natural infection has been observed in the field. In the column headed "Literature" are included those which are stated to be susceptible in the writings of other investigators.

In the supplementary list following Table 1 are included the names of a number of species of *Forsteria* which closely resemble the common hatterry, and which therefore are likely to be susceptible, although this does not necessarily follow. Some species closely resembling the common hatterry are somewhat resistant, while others resembling *F. macrocarpa* are more or less susceptible. There is no absolute correlation, therefore, between morphologic characters and rust reaction. It is well to remember also that hybrids between susceptible and resistant hatterries may be susceptible. It has been shown repeatedly that hybrids between *F. pubescens* and *F. macrocarpa*, which have practically all of the botanical characters of *F. macrocarpa*, may be quite susceptible to rust. In the same way, *F. ilicifolia*, which is a hybrid between *Nahalia aquifolium* and *F. pubescens*, and which has some of the *Nahalia* characters is very susceptible to rust.

Table 1. Species and varieties of Berberis and Mahonia known to be susceptible to Fuccinia graminis.

No.:	Host	: Native : habitat	: Source of information :		: Liter- : Nature :	: Remarks
			: Infection	: Artificial:	: Natural:	
1	<u>Berberis aetnensis</u> Presl.	Sicily, Corsica, Sardinia, Spain			Saccar- do Sydow	
2	<u>B. alesuthiensis</u> Hort.	Probably garden form		Original		
3	¹ <u>B. altaica</u> Pall.	Altai Mts., Asia			Saccar- do Klebahn	
4	¹ <u>B. amurensis</u> Rupr.	Manchuria, No. China	Original	Original	Sydow Saccar- do Jaczes- ski Klebahn	Normal infec- tion
5	<u>B. amurensis japonica</u> Rehd. = <u>B. regelliana</u>	Japan		Original		
6	<u>B. angulosa</u>	Himalayas, Yunnan		Original		
7	¹ <u>B. aristata</u> DC. = <u>B. asiatica</u> , Hybridizes readily with <u>B. vulgaris</u>	Himalayas, Nepal	Original	Original	Bolley Sydow Saccardo Klebahn	
8	¹ <u>B. asiatica</u> Rosb.	Himalayas, Nepal			Sydow	
9	¹ <u>B. atropuropurea</u> Rgl.		Original		Klebahn	
10	² <u>B. brachybotrydis</u>				Sydow	
11	¹ <u>B. brachybotrys</u> C. Gay.	Himalayas			Saccardo	
12	<u>B. bretshneiderii</u> Rehd. Allied to <u>B. koreana</u>	North and West China		Original		

Table 1. (Continued)

No.:	Host	Native habitat	Source of information			Remarks
			Infection	Liter- ature	Natural	
13	¹ <u>B. brevipaniculata</u> Schneid.	China	Original			Infection moderate
14	¹ <u>B. buxifolia</u> Lam.	Chile to Magellan		Sydow		
15	¹ <u>B. canadensis</u> Mill.	W. Va., Va., N.C., Ga., Mo.	Original	Original	Saccar- do Sydow Bolley Klebahn	Infection heavy
16	¹ <u>B. caroliniana</u> Loud. = <u>B. canadensis</u>	Alleghenies		Original	Sydow Saccardo	
17	¹ <u>B. caroliniana</u> Royle. = <u>B. aristata</u>	Himalayas			Butler and Hayman	
18	¹ <u>B. corvi</u>		Original			
19	<u>B. crataegina</u> D. C.	W. Asia, Asia Minor		Original		
20	¹ <u>B. cretica</u> Linn.	Mediterranean, S. E. Europe and Orient		Original		
21	¹ <u>B. declinata</u> Schrad.	Probably garden form			Arthur	
22	<u>B. declinata oxycorylla</u> Schn.			Original		
23	<u>B. diaphana</u> Maxim.	W. China	Original			Infection moderate
24	<u>B. dictophylla</u> Franch.	S.W. China	Original			Infection moderate
25	<u>B. durobrivensis</u> Schn.		Original			

Table 1. (Continued).

No.:	Host	: Native : habitat	: Source of information :			Remarks
			: Infection	: Artificial:	: Natural:	
26	<u>B. emarginata</u> Willd. Possibly <u>B. sibirica</u> x <u>B. vulgaris</u>	S. Europe to Himalayas		Original	Bolley	
27	<u>B. emarginata britzensis</u> Schneid.		Original			
28	¹ <u>B. fendleri</u> Gray Allied to <u>B. canadensis</u>	Colo. to N.Mex.		Original	Arthur	
29	¹ <u>B. fischeri</u> Hort.	Probably garden form		Original	Saccardo	
30	¹ <u>B. fremontii</u> Torr.	W. Texas to Utah, and Mexico	Original			Moder- ately resis- tant
31	² <u>B. fuchsioides</u>	Garden form		Original		
32	<u>B. haematocarpa</u> Wooton. = <u>B. heterophylla</u> Juss.; allied to <u>B. ilicifolia</u> .	Straits of Magellan	Original			
33	¹ <u>B. heteropoda</u> Schrenk.	Turkestan, Songaria	Original		Sydow Jaczew- ski	
34	¹ <u>B. ilicifolia</u> Forst.	Terra del Fuego, Patagonia, Himalayas	Original	Original	Sydow Klebahn	
35	¹ <u>B. integerrima</u> Bunge	Persia, Songaria, Turkestan			Jaczew- ski	
36	¹ <u>B. laxiflora</u> Schr. Allied to <u>B. amurensis</u>	Of unknown origin		Original		
37	² <u>B. liechlinii</u>	Garden form	Original	Original		Heavy infec- tion
38	<u>B. lucida</u> Schrad Probably variety of <u>B. vulgaris</u>	Origin unknown	Original			

Table 1. (Continued)

No.:	Host	: Native : habitat	: Source of information :		: Remarks
			: Location	: Artificial:Natural: culture :	
39	¹ <u>B. lycium</u> Royle	Himalayas			Klebahn
40	¹ <u>B. macrophylla</u> = <u>B. wallichiana latifolia</u> Hook. f., and Thoms.	Probably garden form			Saccardo
41	² <u>B. meghanii</u>	Probably garden form		Original	
42	¹ <u>B. nepalensis</u> Spreng. * <u>M. nervosa</u>	Indian to Japan*			Sydow Klebahn Butler and Hayman
43	¹ <u>B. neubertii</u> Lem.	Garden origin (<u>B. vulgaris</u> x <u>M. aquifolium</u>)		Original	Sydow Saccardo Klebahn Bolley
44	<u>B. oblonga</u> Schneid. Allied to <u>B. heteropoda</u>	Turkestan		Original	
45	<u>B. provincialis</u> Audub. var. <u>serrata</u> (Schneid.)	S. Europe	Original		Moder- ately resis- tant
46	<u>B. pruinosa</u> Franch.	S.W. China	Original		Moder- ately resis- tant
47	<u>B. regaliana</u> Koehe	Japan		Original	
48	¹ <u>B. sibirica</u> Pall.	Enisseysk, Siberia		Original	Sydow Jaczewski Arthur Saccardo
49	¹ <u>B. sieboldii</u> Miq.	Japan	Original	Original	Klebahn Heavy infection

Table 1. (Continued)

No.:	Host	Native habitat	Source of information			
			Infection	Liter-	Re-	Remarks
			Artificial	Natural	ture	
50	¹ <i>B. sinensis</i> Desf.	Caucasus		Original	Sydow Arthur	
51	<i>B. stapfiana</i> Schn.	W. China	Original	Original		
52	<i>B. subtrifoliolata</i> Schn.	W. China		Original		
53	<i>B. swaseyi</i> (Buckl.) Fedde	Mexico	Original		Arthur	
54	<i>B. thibetica</i> Schneid.	W. China	Original			
55	¹ <i>B. trifoliolata</i> (Morici.) Fedde	Texas to Mex.	Original		Arthur	Moder- ately resis- tant
56	¹ <i>B. umbellata</i> Wall.	Himalayas			Butler and Hayman	
57	¹ <i>B. vulgaris</i> Linn.	Eurasia	Original	Original	Saccardo Sydow Arthur Klebahn Jaczewski Butler and Hayman Bolley	
58	<i>B. vulgaris alba</i> Don.			Herbaria original		
59	<i>B. vulgaris asperma</i> Don.			Herbaria original		
60	<i>B. vulgaris carocur-</i> <i>rusea</i> Regel.	Probably garden form		Original		
61	² <i>B. vulgaris emarginata</i>	S. Europe to Hima- layas		Original		
62	<i>B. vulgaris fructuviolacea</i>			Original		

Table 1 (Continued)

No.:	Host	Native habitat	Source of information			Remarks
			Infection:	Artificial:	Natural:	
63	<u>B. vul. japonica</u> Rgl. = <u>B. regalis</u>			Original		
64	<u>B. vul. lutea</u> Don.			Original		
65	<u>B. vul. macrocarpa</u> Jaeger			Original		
66	² <u>B. vul. mitis</u>			Sydow		
67	<u>B. vul. nigra</u> Don			(Herbaria) original		
68	² <u>B. vul. rufurea</u>			Original	Sydow et al	Heavy infection
69	² <u>B. vul. sanguinolenta</u>			Original		
70	² <u>B. vul. spathulata</u>			Original		
71	<u>B. vul. sulcata</u> = <u>B. vulgaris</u> , according to Schneider			Original	Original	Infection Moderate.
72	<u>B. vul. violacea</u> Don			(Herbaria) original		
73	¹ <u>Mahonia aquifolium</u>	B.C. to Oregon N. A.		Original	Sydow Jaczewski	Some- what resistant
74	<u>M. diversifolia</u>	(Cult.) Mich., Quebec			Arthur	
75	¹ <u>M. glauca</u>				Sydow Arthur	

1 Included in Federal Quarantine.

2 Authority not given.

Supplementary list - Forms which resemble B. vulgaris somewhat and may be susceptible:

Berberis buenosayrensis Hort. Mund.; B. chitria Ham (= B. aristata D.C.);
B. aculeata Linde; B. densiflora Boiss et Buhse (= B. gratissima D. C.):
B. floribunda Wall. f. gracilis (Hort.); B. floribunda Wall. var. nepalensis
Hort. Specch.; B. glaucescens St. Hil.; B. guerpilii K. Koch; B. heteronoda
Schrank var. II; B. hookeri Lem. (= B. jamesonii Hort.); B. jamesonii Hort.
(= B. hookeri Lemaire); B. pachyacantha Bienert; B. regeliana Koehne (= B.
vulgaris L. var. japonica Reg.); B. sanguinolenta Schrad. (= B. vulgaris X?):
B. sinensis Desf.; B. sinensis Desf. var. vaitchii I, II, III et.; B. um-
bilicata Hort. (Barb.) (= B. lycium Poyle); B. virescens Hook. (leaves small).

Table 2 - Plants (varieties of *Diospyros*) which did not rust as a result of artificial inoculation.

No.	Species	Rust varieties used			Total number of plants inoculated
		prutici	secalis	avenae	
1	<u>Berberis aggregata</u> Schneid.	8			
2	<u>B. chinensis</u> Poir.	6	8		
3	<u>B. dielsiana</u> Fedde.	6			
4	<u>B. poliretii</u> Schneid.	6			
5	<u>B. thunbergii</u> D. C.	Many	Many		Many
6	<u>B. thunbergii maximowiczii</u> Franch. and Sav.	Many	Many		Many
7	<u>B. wilsonae</u> Hemsl. and Wils.				
8	<u>Mahonia japonica</u> D. C.	17	10		
9	<u>M. pinnata</u> Fedde.	6			
10	<u>M. repens</u> Don.	34	13		
11	<u>Caulophyllum thalictroides</u> (L) Michx.	19	5		11
12	<u>Diphylleia cymosa</u> Michx.		1		1
13	<u>Jeffersonia diphylla</u> (L) Pers.	2			
14	<u>Pedogyllum peltatum</u> L.	2			

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15 October 10, 1923 No. 25
Personnel (October 1-10) and Field Station (September 16-30) Issue

PERSONNEL ITEMS

Martin A. Bell and Elmo A. Briggs, field assistants in the cooperative cereal experiments conducted at the Montana Agricultural Experiment Station, Bozeman, Montana, resigned at the termination of August 31 and September 19, respectively.

Joseph A. Bourke, messenger in the Office since March 8, resigned at the termination of September 30.

Royd R. Churchill, field assistant in the cereal experiments conducted at Akron Field Station, Akron, Colo., has completed the work for which he was appointed. His appointment was terminated September 18.

Eugene H. Emerson, field assistant in the cooperative cereal investigations at Ithaca, N. Y., resigned his position September 30.

Miss Lillian E. Fay, clerk and typist, in the Office since December, 1920, resigned from the service October 10.

Miss Mary A. Hopkins, formerly clerk to the State leader in barberry eradication in Illinois, has been appointed agent in barberry eradication, effective October 1. She will assist the State leader in planning and directing the campaign, preparing publicity matter, etc., and in pathological studies.

Charles L. Judson, field assistant in the cooperative cereal experiments at Davis, Calif., during the past summer resigned his position August 8.

Miss Nellie M. Keller, stenographer and typewriter in the Office, resigned her position August 18 and returned to her home in Portland, Oreg., because of illness in her family.

Edward D. Koehler, field assistant in the cooperative cereal-disease investigations conducted at La Fayette, Ind., resigned his position September 18 in order to resume college studies.

Wilbur A. Korfhage, agent in the cooperative stem-rust investigations conducted at University Farm, St. Paul, Minn., since April 2, has been appointed full-time field assistant in the barberry eradication campaign in Minnesota.

Walter C. Leth, field assistant in the stripe-rust investigations conducted in cooperation with the Idaho Agricultural Experiment Station, has completed his duties. The appointment was terminated September 30.

Frank D. Ruppert, who has been assisting in the cooperative cereal investigations at Manhattan, Kans., since July 2, has completed his duties. The appointment was terminated August 31.

The appointment of George F. Sprague, field assistant in the cooperative experiments with corn and small-grain crops at the North Platte Field Station, since June 1, was terminated September 30. Mr. Sprague is returning to college studies.

VISITORS

Prof. D. N. Borodin, American representative of the Russian Bureau of Applied Botany, was in the Office October 4 to discuss the approaching visit of Prof. Socrates Tchaianov, agronomist of the State Institute of Experimental Agronomy (Scientific Agricultural Committee) of Petrograd and Director of the Vorondesh Agricultural Experimental Station, who expects to make a tour of the chief agricultural experiment stations and research institutions of America and western Europe. Assistance was given Professor Borodin in arranging a proposed itinerary for Professor Tchaianov, who will arrive in this country within the next month.

Charles D. Reed, official in charge of Weather Bureau Office, Des Moines, Ia., was an Office visitor October 9.

Dr. H. C. Sampson, a representative of the Empire Cotton Growing Corporation of London, with field headquarters at Zomba, Nyasaland, East Africa, was an Office visitor October 9 to consult with experts concerning the growing of corn and rice.

MANUSCRIPTS AND PUBLICATIONS.

On October 8 there was transmitted a paper by Frederick D. Richey, entitled "Adjusting Yields to Their Regression on a Moving Average, as a Means of Correcting for Soil Heterogeneity," for publication in the Journal of Agricultural Research.

On October 9 there was transmitted a paper by John B. Sieglinger, entitled "Seed-Color Inheritance in Certain Grain-Sorghum Crosses," for publication in the Journal of Agricultural Research.

On October 10 a paper entitled "Morphological and Physiological Studies on the Resistance of Wheat to Puccinia graminis tritici (Pers.) Erikss. and Henn.," by C. R. Hursh, was transmitted for publication in the Journal of Agricultural Research.

On October 10 a paper by E. C. Stakman and O. S. Aamodt, entitled "The Effect of Fertilizers on the Development of Stem Rust of Wheat," was transmitted for publication in the Journal of Agricultural Research.

On October 10 a paper by Freeman Weiss, entitled "The Effect of Rust Infection upon the Water Requirement of Wheat," was transmitted for publication in the Journal of Agricultural Research.

Galley proof of Department Bulletin 1183, entitled "Milling and Baking Experiments with American Wheat Varieties," by J. H. Shollenberger and J. Allen Clark, was read October 2.

Galley proof of Department Bulletin 1194, entitled "Improvement of Zubanka Durum Wheat by Pure-Line Selection," by Ralph W. Smith, L. R. Waldron and J. Allen Clark, was read October 5.

Department Bulletin 1162, entitled "The Rôle of the Genus Rhamnus in the Dissemination of Crown Rust," by S. M. Dietz, was received from the Government Printing Office October 2.

Correction.

On page 253 (line 1) of the Cereal Courier of September 20 (vol. 15, no. 23) an error was made in giving Mr. O. R. Mathews the title of superintendent. Mr. Byer Aune is superintendent of the Belle Fourche Experiment Farm, of the Office of Western Irrigation Agriculture, while Mr. Mathews is assistant agronomist in charge of dry-land agriculture investigations at the Belle Fourche Experiment Farm.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs) (No report)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor) (No report)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love)
(No report)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (No report)Agricultural Experiment Station, Baton Rouge (H. Stoneberg) (No report)

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (October 2)
During the latter half of September, the weather in Missouri has been seasonable and farm operations have progressed normally. Some wheat has been sown but a considerable proportion of the wheat seeding is being delayed until the fly-free date. The prospective wheat acreage has been reduced slightly.

We are planning to sow wheat on the Station field beginning Friday, October 5th and should finish seeding by Tuesday, October 9th. About 4,000 rod-rows and about 100 drill-width plots will be sown.

The yields of wheat varieties in rod-rows at Columbia this year were as follows:

Kanred	25.59	Portage	19.63
Nigger.....	23.24	Harvest Queen.....	19.64
Blackhull.....	23.00	Gladden.....	19.55
Michigan Wonder No. 209..	22.44	Michigan Wonder No. 21....	19.08
Michigan Wonder No. 54...	22.28	Kessinger.....	19.07
Funks Smooth.....	21.44	Farmers Friend.....	18.86
Minhardi.....	20.64	Blue Stem Fultz.....	18.77
Michigan Wonder.....	20.63	Illini Chief.....	17.67
Harvest Queen.....	20.39	Trumbull.....	17.64
Harvest Queen.....	20.34	Michigan Wonder No. 96....	16.56
Fulcaster.....	20.30	Red Wave.....	15.87
New York No. 123.32.....	20.10	Zimmerman.....	15.62
		Red Rock.....	14.28

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (No report)

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins) (October 4) Corn here is getting ripe fast, but, as yet, it has not been possible to harvest many of the selfed ears, as the fields have been too wet. Some of the corn around here was hit by early frosts a couple of weeks ago. None of the corn at the farm happened to get hit although the soy beans right alongside of the selfing plot were pretty badly nipped.

Agricultural Experiment Station, Ames (Investigation of Crown Rust of Oats, S. M. Dietz) (No report)

Iowa State College, Ames (Barberry Eradication, J. H. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (October 2) Benjamin Koehler left Bloomington October 1 for Madison, Wis., where he will pursue graduate study at the University of Wisconsin.

Dr. T. L. Burlison was here September 28 for consultation regarding manuscripts that are being prepared cooperatively by the Office of Cereal Investigations and the University of Illinois.

Considerable frost injury in this part of the State has resulted in damage to the corn crop. Because of continued rains and lack of warm weather corn is very slow in ripening.

Mr. Koehler planted the wheat nurseries September 26 to 28.

Dr. W. H. Tisdale spent September 26 to 28 at Bloomington, Ill., taking notes on the prevalence of and injury from smut in experimental plats where different diseases were being studied.

We have just completed taking data on the pulling resistance of approximately 1,500 corn plants of 40 inbred strains of corn. Half of the corn of each strain was inoculated at planting time with Gibberella saubinetii. Strains that showed a high pulling resistance in 1922 also were high in pulling resistance this year, and vice versa. Yield of grain and pulling resistance were directly correlated.

Post Office Building, Urbana (Barberry Eradication, G. C. Curren) (August report) In August more than 7,000 barberry bushes were found and destroyed by State and Federal scouts, this being the largest number located and condemned in any one month in Illinois since the campaign started. Of this number 4,274 were treated with chemicals. More than 30 tons of crushed rock salt and 24 gallons of sodium arsenite were used.

Rock Island, Lee, and Bureau Counties were finished in August. Several other counties are almost completed. The survey has progressed much slower this year for the reason that field men arrange for the destruction of all barberry bushes that they find. This involves the task of transporting salt or sodium arsenite to the properties where barberfies are found. In most all cases the chemicals are applied to the bushes by the scouts, who have found that it is not safe to let others do it as the work is not done efficiently.

The State department of agriculture conducted the survey in Kankakee, Ford, and Livingston counties. In Ford County the scouts found a number of common barberry bushes in the middle of a long osage orange hedge and recommend the careful examination of all such hedges, which are very common in Illinois. Much time has been spent in scouting escaped areas in Kankakee County and treating the bushes found in the thickets. In one 40-acre wooded pasture nearly 2,000 bushes, sprouts, and seedlings were treated. The scouts in Kankakee County report that the people have been glad to help them in every possible way. The owner of a threshing machine carried a specimen of barberry around with the rig to show farmers what the barberry looks like and explained the damage it does.

In Henry County the Federal field assistants report that the owners of barberry are willingly cooperating in removing their bushes. In Cook County 700 bushes were found in August. The entire lower end of Cook County has been surveyed and the scouts are getting in close to the heart of Chicago where the population is exceedingly dense. The field men in the county state that barberry eradication is no longer a new thing to most of the property owners. Every day people say that they have heard about the campaign against the barberry, having either discussed it with their neighbors or read about it in some farm paper.

Several field men will be retained during the fall months and every effort will be made to cover thoroughly as much territory as possible before winter sets in.

(September report) In September, 13 field assistants resigned, reducing the eradication force to 5 assistants. The Cook County survey was brought to a close for this year. The portion of Cook County south of 71st Street, Chicago, has been surveyed, resulting in the location of more than 2,100 bushes. This is about 10 per cent of the total number found in the State this year. The resurvey of Lake County was completed and that of Jo Daviess County begun in September. Salt is being applied to sprouting bushes in the areas of escapes around Galena in the latter county. It is reported that sprouts are being found in most instances where the owners of the land had removed bushes.

The original survey was completed in Lee, Grundy, Kendall, Ford, La Salle, Will, Bureau, Henry, and Livingston counties in September. Bushes were found in the following numbers during the summer:

<u>Name of County</u>	<u>Number of bushes</u>	<u>Name of County</u>	<u>Number of bushes.</u>
Bureau.....	348	La Salle.....	4621
Ford.....	94	Lee.....	830
Grundy.....	79	Livingston.....	670
Henry.....	1190	Rock Island.....	1498
Kendall.....	1128	Will.....	3203

The State department of agriculture finished the survey of Ford and Livingston counties and most of Kankakee County in September. In the latter county a large area, consisting of 3,970 bushes, was located in Salina, Rockville, and Limestone townships. The original hedge from which these bushes had escaped was planted about 75 years ago and was destroyed in 1903.

Studies on the overwintering of stem rust uredinia spores are being planned in different sections of the State. Plats of wheat have been sown at Wheaton, Urbana, and Cairo. Difficulty is being experienced with the experiment for the reason that the stem rust in the plats has all passed into the telial stage. Most of the plats also have an abundant infection of leaf rust.

All the photographs taken this season have been mounted in a large photographic record book. These photographs give an excellent idea of what has been accomplished this year.

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer) (No report)

Purdue University Agricultural Experiment Station, La Fayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (No report)

College of Agriculture, Purdue University, La Fayette (Barberry Eradication, K. E. Beeson) (No report)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, J. W. Baringer) (September 30) An area comprising four and one-fourth counties in Ohio was covered by a systematic original survey for common barberries in September. The territory thus covered consisted of three-fourths each of Erie, Knox, and Licking Counties, one-fourth each of Franklin and Hamilton counties, one-half of Ross County and all of Wyandot County. The usual number of plantings were found but of these an unusually large proportion was removed. The original survey of Franklin, Licking, Knox, and Erie counties will be completed early in October.

Our resurvey program was completed in September in the 29 counties covered by the original farm-to-farm survey up to December 31, 1922. All locations where bushes, sprouts, or seedlings were removed in the survey area in 1922 were revisited in 1923. Wherever traces of living barberries were found the usual procedure of digging or treating was followed. Special attention was given to escaped locations in the northwestern part of the State.

Eradication demonstrations were held at fairs in the following towns in September: Ottawa, Fremont, Findlay, Bucyrus, Nova, Loudenville, Mount Gilead, Marion, Bellefontaine, Newark, Lebanon, and Eaton. Farmers were much interested in these demonstrations.

A bulletin entitled "Eradication of Common Barberry and Black Stem Rust in Ohio" was published in September by the Extension Department of the College of Agriculture, Ohio State University, in cooperation with the United States Department of Agriculture, and is being distributed by the University Extension Department. The authors are planning a revision of the bulletin to be used by barberry assistants in the 1924 field season.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) (August report) In August, 28 field assistants were employed. In addition, one assistant was engaged in publicity and educational phases of the campaign.

The subsistence expenses of these 28 field men were paid by the State department of agriculture from July 2 to August 15. The latter also paid similar expenses of ten employees from August 16 to 31. The Conference for the Prevention of Rust contributed the subsistence expenses of the publicity man, whose services have aided greatly the success of the campaign.

Since July 2 the farm-to-farm survey has been completed in St. Clair, Lapeer, Genesee, Shiawassee, and Clinton counties. By the first week in September the survey of Ionia, Kent, Ottawa, and Muskegon counties will be finished. With the completion of Ottawa County the fourth tier of Michigan counties will have been covered in the original survey and all bushes found eradicated. Muskegon is the first county surveyed in the fifth tier.

Approximately 35,000 bushes and 40,000 seedlings were eradicated in the period from July 2 to August 31. M. N. Levine, pathologist, St. Paul, Minn., was in Michigan from August 17 to 20 to collect rust material. He was enthusiastic about finding considerable rusted Poa compressa in the ideal stage for inoculation experiments.

The city of Grand Rapids was surveyed in January and February of 1919, the city forester cooperating by furnishing laborers. Nearly all bushes found were removed, and in the spring of the same year he furnished another squad of men for a thorough "clean up." Possibly at that time an extensive escaped area about a mile outside the present city limits should have been found. Credit was accepted for having made a thorough survey of Grand Rapids, but the rural survey of this year soon brought to light this escaped area, located on property from which everyone seems free to take what he pleases. Owners of city property in general, and especially new home builders, have transplanted from this area as many barberries as their tastes demanded, with the result that every piece of property in Grand Rapids must be thoroughly inspected. This situation in Grand Rapids indicates that larger appropriations for barberry eradication would effect a greater saving of time and money than is accomplished by small appropriations that limit the extent of eradication within a given period. If the rural survey of Kent County could have quickly followed the survey of the city of Grand Rapids time and money would have been saved.

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab Investigations, J. G. Dickson) (No report)

Agricultural Experiment Station, Madison (Wheat Rosette and Take-All Investigations, H. H. McKinney) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker) (No report)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt) (September 22) Weather conditions were very favorable for harvest this year, and the large nursery was taken care of in due time. A very successful stem-rust epidemic was obtained on which some excellent notes were taken and from which a large quantity of the susceptible hybrid material was eliminated. Some of the older hybrid selections still maintain their resistance and a number of the newer ones appear to be promising.

Progress is being made in obtaining a high-quality, hardy winter wheat. A large number of seemingly hardy F_3 and F_4 hybrid selections were studied individually for their seed characters. The lines which appeared to be homozygous were bulked for rod-row tests. The most promising individual plant selections were again placed in plant rows. The seeding was completed the first week in September.

Within the next few months we shall summarize and analyze the vast accumulation of data of the past year.

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (No report)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger) (October 2)

In the first part of September the weather was dry, but in the last half of the month there has been enough rainfall to more than bring up the average, in fact, there has been too much precipitation for practical purposes.

From September 14 to 20 the writer made a trip through the Panhandle of Texas to Dalhart. From Gage, Okla., to Higgins, Tex., in the tighter land much land is prepared for wheat and the recent rains should insure at least a normal acreage sown to wheat. The row crops in the same vicinity will make fair yields, although the yields of forage crops will be comparatively light because of short stalk growth. From Higgins to Spearman, via Canadian, Tex., there is very little cultivated land. In the vicinity of Spearman there will be quite a wheat acreage. Because of the drought the row crops will not make very good yields of either grain or forage. From Spearman to Dalhart, via Dumas, Texas, there is little cultivated land. The grass looked fair.

At Dalhart Field Station good sorghum crops were seen, the only drawback to them being the excessive suckering and branching as the result of rains following a dry period. It is doubtful if the branch heads will mature, as frost is likely to occur at any time. Good grain and forage yields will be obtained at Dalhart should frost come any time, as the crop of main heads assures good yields. The date-of-seeding experiment with broomcorn at Dalhart made a very heavy growth and the peduncles were longer than on any other Acme broomcorn I have seen.

The return trip was made by way of Guymon, Okla., and Perryton, Texas. Very good sorghum crops were seen. The soil has some sand and the crops showed little sign of drought. Kafirs appeared especially good. Row crops had suffered from dry weather.

At the Woodward Field Station nearly all broomcorn is harvested. The grain sorghums have been harvested as they were ripe. In spite of the severe drought most of the sorghum varieties will make seed, and all of the broomcorns have already produced seed.

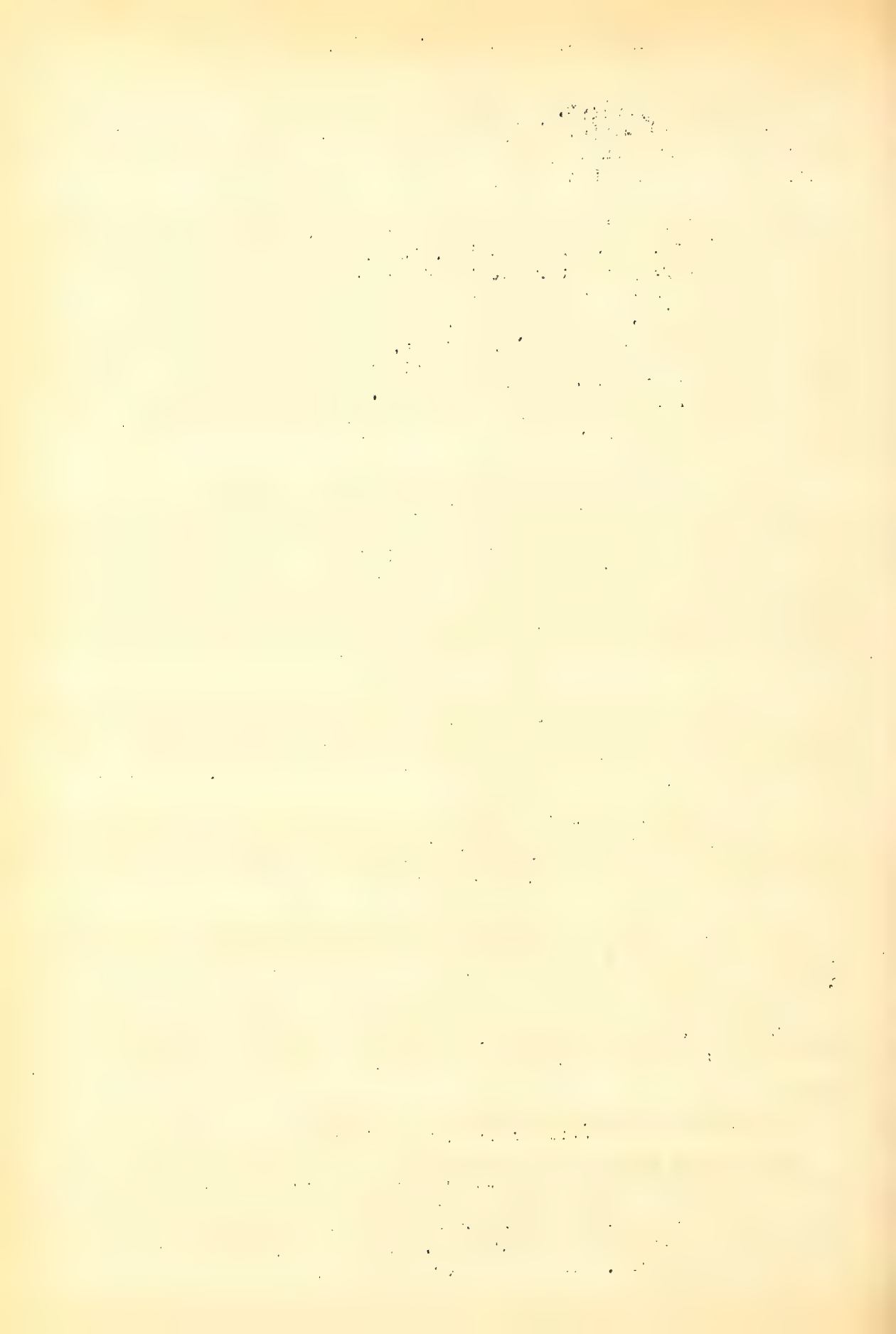
The rains of the later part of September will enable wheat to get a good start, although little has been sown to date because it has been too wet since it started to rain.

Maximum temperature since last report, 93° September 26; minimum, 50° September 21. Precipitation for September, all since the 10th, 9.52 inches.

KANSAS

Agricultural Experiment Station, Manhattan (J. H. Parker) (No report)

Hays Branch Experiment Station, Hays (A. F. Swanson) (October 1) The weather of the latter part of September has been most favorable for seeding wheat. The total precipitation for the month is a little more than 4 inches. With an equal precipitation in August there is an abundance of moisture to start the 1924 wheat crop. The wheat acreage in this vicinity will be about as large as usual.



All of the wheat seeding on the Cereal Project will be completed by September 3.

Because of the late rains the sorghums are ripening slowly. This is particularly true of the kafirs. The kafirs will be ready for harvest within a week. This is about three weeks later than under normal conditions.

COLORADO

Akron Field Station, Akron (F. A. Coffman) (September 30) Weather conditions during the last half of September have been erratic. There have been several periods of foggy and cloudy weather, but the precipitation has been very slight. For the most part the temperature has been cool and dry. The first frost of the season came on the night of September 28. This was not heavy enough to kill all vegetation, but the leaves of the corn and sorghums and of the garden vegetables were nipped.

Since September 16 the time has been spent in making sorghum selections and in preparing and seeding nursery and plat grain. The winter-wheat varietal experiment was sown September 17. This wheat is emerging on fallow to excellent stands. On the corn ground no wheat has emerged, as the soil is too dry. The winter wheat in the nursery sown prior to September 20 has started to emerge. Grasshoppers have done some damage to the wheat in both the field plats and nursery by eating off the plants. A few frosts or periods of damp cold weather will kill them off and save the grain.

October 2.

Within the past few weeks preliminary cooperation has begun between the State Agricultural Experiment Station and the Akron Field Station. When I was at Fort Collins last month the matter of cooperation was discussed, the members of the agronomy department indicating their desire to start a cereal nursery at Akron this fall. Accordingly on October 1, D. W. Robertson, associate agronomist, and his assistant, Mr. Deming, came to Akron and sowed some 500 rod rows of Colorado Station wheat hybrids in a plat adjacent to our own nursery seedlings. Professor Robertson has asked that I take the data on the fall stand of these rows. In return for this and to make up for the time thus spent he has made arrangements to pay a man to assist me in my own work. This is the first step in the cooperation. Next summer Professor Robertson will send an assistant, to be paid by the Station agronomy department, who will spend at least a month at Akron to help take notes on and harvest these rod rows, besides assisting in our own experiments.

The winter-wheat seedlings are the most extensive in the history of the Station. When the furrow-drill seedings are completed we shall have nearly 2,400 rod rows and 500 or more selection rows. There are more than 200 plat

seedings of winter wheat and rye. If spring grains are seeded in the same proportion it certainly will be an advantage to have an extra man for the peak of the work in July. The winter-wheat nursery sown this fall, including the Fort Collins wheat, is about 40 per cent larger than the one grown in 1923.

Average yields obtained in varietal experiment with winter wheats on fallow and corn ground at the Akron Field Station in 1923.

<u>Variety.</u>	<u>C. I. No.</u>	<u>Yield.</u> (Bu. per acre)
Kanred	5146	11.5
Blackhull	6251	9.6
Montana No. 36	5549	8.1
Kharkof	1583	7.7
Kharkof	1442	7.5
Turkey	1571	6.8
Hussar	4343	6.8
Crimean	1436	6.7
Kharkof	6626	6.6
Sherman	4430	6.5
Kharkof (6P4)	4207	6.3
Karmont	6700	6.2
Alton	1438	6.1
Minturki	6155	4.2
Buffum	3330	2.7

Average yields obtained in varietal experiment with spring wheats on fallow and corn ground at the Akron Field Station in 1923.

<u>Variety.</u>	<u>C. I. No.</u>	<u>Yield.</u> (Bu. per acre)
<u>Common</u>		
Quality	6607	19.2
Baart	1697	17.3
Prelude	4323	16.2
Hard Federation	4733	15.6
Redsask	6794	15.2
Red Bobs	6255	14.7
Converse	4141	14.4
Ruby	6047	13.9
Marquis	3641	13.5
Kota	6248	13.1
<u>Durum</u>		
Arnautka	6881	17.2
Peliss	1584	16.7
Monad	3320	16.6
Mindum	5296	15.8
Kubanka	1440	14.9
Nodak	6519	12.8

Agricultural College, Fort Collins (Barberry Eradication, E. A. Lungen) (No report)

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel) (No report)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, R. U. Cotter) (No report)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, L. D. Hutton) (September 21) During the last 30 days to September 15, a resurvey has been made in South Dakota to find out as nearly as possible the situation with regard to overlooked bushes. Many local rust epidemics seemed to break out in the summer before the general rust epidemic. Records were kept of these locations as nearly as possible and teams were sent into the suspected areas as soon as they could be conveniently drawn from original survey, and the results have many times repaid its expense. In northern Beadle County and southern Spink County, a territory which has always rusted more than usual in past years, and from which the source of infection is known to have started this year, was resurveyed with the result that a hedge of 46 bushes, eight feet in height were found within half a mile of the county line of the two counties. Old settlers gave a very interesting account of how fields in this vicinity were always regarded as the rust meter for coming seasons. A half dozen other equally interesting finds have been made.

Resignations of men who will go to college have cut the field force to 13 men. From present indications South Dakota will be entirely covered by a farm-to-farm survey by October 15 with the exception of Lawrence County, east one-half of Pennington and north one-half of Custer counties. Sprouting barberries are being revisited and salted by two of the teams.

Belle Fourche Experiment Farm, Newell. O. R. Mathews, assistant agronomist, Office of Dry-Land Agriculture, sends the following data on the average yield of spring and winter wheat and winter rye grown under irrigation in 1923:

Spring Wheat.

<u>Variety.</u>	<u>C. I. No.</u>	<u>Yield.</u> (Bu. per acre)	<u>Weight.</u> (Lbs. per bu.)
Kubanka	1440	15.9	51
Acme	5284	12.5	45
Power	3697	12.4	53
Kitchener (Dis- co 148)	6891	11.0	42
Ruby (Disco 126)	----	14.6	54
Marquis	3641	11.5	47
Kota	5873	17.7	55
Haynes Blue- stem	2874	10.3	44

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Winter Wheat.

Turkey	3055	7.0	44
Kanred	5146	6.3	40

Winter Rye.

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NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (T. E. Brentzel)
(No report)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue) (Report August 20 to September 25) Sixteen field men, both State and Federal appointees, have resigned this month. The remaining force is now engaged in McLean, Billings, Mercer, Oliver, and Stark counties. Most of these men will remain until the middle of October.

The original survey of Renville, Burke, Divide, Williams, Montrail, McKenzie, and Golden Valley counties has been completed this season. Some of the largest plantings of common barberry have been located in Williams, Divide, Burke, and Golden Valley counties. Besides these several small ones containing from one to 25 bushes have been located. A hedge 250 feet long and containing about 200 bushes approximately 4 feet tall, was found on a deserted farmstead near Spring Brook in Williams County. Near Wheelock in the same county 50 bushes were located.

Weather permitting it is hoped to complete the original survey in all but two of the western counties. Another planting, large for this State, was found on a farm near Beulah, Mercer County. This planting originally consisted of 700 bushes planted in 1909.

Fifty bushes were found east of Crosby, Divide County, in a single planting. According to the statements of the owner and his neighbors the first rust appears annually in that community near those bushes. Because of the very heavy rust on grasses and grains adjacent to these bushes, all who came to make observations seemed convinced that the common barberry had a great deal to do with rust. This is true for each barberry location surrounded by rust which was used as a demonstration.

According to the county agent of Golden Valley county and the people of that community, black rust starts each year in the vicinity of Sentinel Butte. In the survey this year the scouts located 12 large bushes in that vicinity. The spread of rust from each barberry location has been very evident, in many cases being very pronounced.

There has been excellent cooperation on the part of townspeople and farmers. The State leader and his experienced squad leaders have made it a point to meet people who were either antagonistic or misinformed. That these people were actually convinced was evidenced in the cooperation and assistance which they later gave to the campaign.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.) (October 2) The last half of September has been generally cloudy with moderate temperatures and frequent showers.

Winter-wheat bulked-hybrid progenies were sown September 18, and emerged September 27 with good stands.

Threshing of the flax in the date-of-seeding-and-tillage plats sown June 1 and June 15 has been delayed on account of wet weather and still remains to be done.

Flax from the nurseries was hauled in and placed in the greenhouse to dry. Notes are completed on plant selections made this year, and threshing of the nursery bundles is well under way.

The flax clothes wringer thresher, instead of being turned by hand as previously, is now being run by motor, which greatly facilitates and shortens the job of threshing.

Maximum temperature for the last half of September, 85 degrees, September 21; minimum, 35 degrees, September 17; precipitation, 1.75 inches.

Dickinson Substation, Dickinson (R. W. Smith) (October 1) Within the past week 3.44 inches of rain has fallen, a total of 4.55 inches for September. This breaks the record for September at this substation. Threshing operations were suspended during most of the week. Threshing at the Substation was completed except for an increase plat of flax and a portion of the nursery. Most of the threshing in this vicinity is completed.

Considerable winter rye has been sown in this locality since the middle of September. Some fall plowing has been done and much more should be done this month with the improved soil moisture conditions for that work. Winter grain at the Substation is in good condition.

Corn varieties have been husked and weighed and samples stored for determining the loss of moisture. The yield of dry corn, which promises to be unusually good, will be reported when the loss of moisture is determined.

Victor V. Sturlaugson, who has been field assistant in the cereal project since April 16 resigned, effective September 30, to continue study at the North Dakota Agricultural College.

Among recent visitors at the Substation were Dr. R. A. Oakley and H. L. Westover, of the Office of Forage-Crop Investigations, J. M. Stephens, of the office Dry-Land Agriculture, and J. C. Diamond, agricultural statistician Mandan, N. Dak., for North Dakota.

The following yields were obtained from the flax varieties and from the flax-wheat mixture experiment.

<u>Flax.</u>		
<u>Variety.</u>	<u>C. I. No.</u>	<u>Yield.</u> (Bu. per acre)
Stark	185	16.6
Demont	3	13.1
N.D.R.No. 73	14	13.1
N.D.R.No. 52	8	12.8
Reserve	19	12.5
Kazan Selection	250	11.5
Billings	184	10.8
Primost	12	10.5
N.D.R.No. 114	13	10.2
----	186	10.2
----	183	9.8

Flax-Wheat Mixtures.

<u>Mixture.</u> (Lbs. per acre)	<u>Yield.</u> (Bu. per acre)	
	<u>Flax</u>	<u>Wheat</u>
Flax 15, wheat 10	3.9	3.9
Flax 15, wheat 20	3.7	6.9
Flax 15, wheat 30	5.9	10.2
Flax 25, wheat 10	10.0	3.4
Flax 25, wheat 20	6.8	4.9
Flax 25, wheat 30	8.1	10.3

MONTANA

Judith Basin Substation, Moccasin, (R. W. May) (September 29) The seeding of the winter-wheat plats, the threshing of all grains grown in plat tests, and the harvesting of the corn and nursery flax have been the major operations which have been completed since the last report. All of the corn was harvested on September 18, which was six days following the frosts. The winter-wheat plats, including the varietal tests and the furrow-drill experiments, were sown September 19 to 21, and are now emerging from the soil (September 29). The winter-wheat nursery rows, which were sown from September 6 to 14, have fully emerged and made considerable growth. Stand counts have been made on most of the nursery rows.

The threshing of the experimental plats was completed yesterday. The remainder of the nursery threshing must be delayed until the commercial fields of grain are threshed, unless rainy weather releases help before then. There is a week of nursery threshing, cleaning, and weighing yet to be done.

The flax nursery was harvested yesterday (September 28), which is unusually late for flax harvest, and yet nine-tenths of the rows were harvested on the green side.

The weather this month has been very favorable for harvesting and threshing and other field work. The total precipitation for the month has been less than one-half inch. However, there have been showers all afternoon and promise to continue throughout the night. This precipitation has not been recorded.

The minimum temperature for the month was 33 degrees on September 21 and 28, and the maximum temperature was 80 degrees on the 20th.

Visitors at the station since the last report were Dr. R. A. Oakley and H. L. Westover of the Office of Forage-Crop Investigations.

State College of Agriculture, Bozeman (Parberry Eradication, W. N. Christopher) (No report)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe) (No report)

Agricultural Experiment Station, Moscow (Stripe Rust Investigations, C. W. Hungerford) (No report)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (September 25)
The following table gives the yields obtained in the varietal experiment with barley.

Acre yields in bushels of spring barley varieties grown in duplicate 1/20-acre plats at Moro, Oreg., in 1923.

Rank	Variety	C. I. No.	Yield (Bu. per acre)		
			Series 1	Series 2	Average
1	Trebi	936	66.7	73.3	70.0
2	Peruvian	935	69.6	63.3	66.5
3	Odessa	927	62.5	68.7	65.6
4	Peru	702	70.8	55.8	63.3
5	Coast	626	72.9	51.2	62.1
6	Hannchen	531	58.7	64.2	61.5
7	Flynn	1311	66.2	54.2	60.2
8	Arequipa	1256	58.7	61.3	60.0
9	Mariout	261	59.8	59.2	59.5
10	Meloy	1176	51.7	65.8	58.8
11	Success	----	58.3	----	58.3
11	Meloy, Sel. 3	----	58.3	----	58.3
12	Himalaya	620	63.8	50.4	57.1
13	Smyrna	658	50.8	55.0	52.9
14	Beldi	190	52.9	50.0	51.5
15	Meloy, Sel. 1	----	47.5	----	47.5
Average					59.6

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones) (No report)

University Farm, Davis (V. H. Florell) (No report)

Agricultural Experiment Station, Berkeley (F. N. Briggs) (No report)

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C E R E A L C O U R I E R

Official Messenger of the Office of Cereal Investigations,
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15 October 20, 1923 No. 26
Personnel (October 11-20) and Field Station (October 1-15) Issue.

PERSONNEL ITEMS.

Charles E. Chambliss, agronomist in charge of rice investigations, returned to Washington October 18. He spent two weeks in Minnesota and Wisconsin among the Chippewa Indians, studying their methods of gathering and parching wild rice and collecting large quantities of botanical specimens, including seeds. The latter will be sown under greenhouse conditions at Arlington Farm. Much of the time was spent on the lakes and many excellent photographs were taken in the wild rice region.

Mr. Chambliss spent 3 weeks in southeastern Louisiana studying the cooperative rice experiments at Crowley and inspecting fields of Fortuna rice and Biloxi soybeans. In Alabama, Georgia, Florida, and South Carolina he inspected fields of rice grown without irrigation by State stations and individual farmers in cooperation with this Office.

Mrs. Amelia S. Guernsey, clerk in the Office since October 17, 1921, resigned her position at the termination of October 15.

C. W. Warburton, formerly agronomist in charge of cereal agronomy investigations, and recently appointed Director of Extension Work in the Department of Agriculture, was honored by his former scientific and administrative associates of the Office of Cereal Investigations and the Bureau of Plant Industry, at a luncheon at the Washington City Club October 11, F. D. Richey presiding. Thirty-nine guests were present. After the luncheon brief talks were made by Doctors C. R. Ball, A. G. Johnson, W. A. Taylor, K. F. Kellerman, and E. D. Ball, and Mr. Warburton.

VISITORS

Harrison Fuller, General Secretary of the Conference for the Prevention of Grain Rust, and Executive Vice-President of the Wheat Council of the United States, was an Office visitor October 19 and 20 to discuss the results accomplished in barberry eradication and plans for the future.

Takashi Sasaki, assistant professor of agronomy and plant breeding at the Agricultural College of the Tokio Imperial University, consulted with crop specialists in the Office October 25, 26, and 27. Professor Sasaki has been in the United States nearly a year, having spent some time at Berkeley, Madison, and Ithaca, and in the city of Washington. He will leave very shortly for Canada and then will sail for Europe where he will visit the leading research institutions before returning to Japan in December, 1924.

MANUSCRIPTS AND PUBLICATIONS

A manuscript entitled "Investigations on the Nematode Disease of Cereals Caused by Tylenchus tritici," by R. W. Leukel, was submitted October 20 for publication in the Journal of Agricultural Research.

A manuscript entitled "Varietal Resistance or Susceptibility of Oats to Loose and Covered Smuts," by George M. Reed, was transmitted October 20 for publication as a professional paper of the Department Bulletin series.

Galley proof of article entitled "Influence of Soil Temperature and Moisture on Infection of Wheat Seedlings by Helminthosporium sativum," for publication in the Journal of Agricultural Research, by Harold H. McKinney, was read October 4.

Page proof of paper entitled "Specialized Varieties of Puccinia glumarum and Hosts for Variety Tritici," by Charles W. Hungerford and C. E. Owens, for publication in the Journal of Agricultural Research, was read October 15.

Department Bulletin 1173, entitled "Experiments in Wheat Production on the Dry Lands of the Western United States," by David E. Stephens, Max A. McCall, and Aaron F. Bracken, was received from the Government Printing Office October 12. (In cooperation with the Oregon, Washington, and Utah Agricultural Experiment Stations.)

The article entitled "Fungicidal Dusts for the Control of Bunt," by William W. Mackie and Fred N. Briggs, was published as Calif. Agr. Exp. Sta. Bul. 364, p. 533-572, 3 pl., 12 fig. May, 1923. Copies were received October 16. This bulletin is based on investigations conducted in cooperation between the Office of Cereal Investigations and the University of California Agricultural Experiment Station.

October 15, 1923

ACCURACY IN SCIENTIFIC DATA.

The mathematical data of the manuscripts submitted for publication recently have been checked very carefully. Several errors in addition, subtraction, multiplication, and division in the tables covering statistics of production, yield, climatic factors, etc. have been found. Some of these errors have been of considerable size and importance. This naturally is a condition very disturbing to all concerned with the reputation of the Office, Bureau, and Department for accuracy in their published material. Everyone will be interested in correcting this condition.

I think we all will agree that primary responsibility for accuracy rests with the author. In most cases, he is the man who has made the original field notes in the notebooks and has compiled them for annual reports, and in all cases he is the man who has prepared them for the manuscript. If mathematical errors are found in the manuscript he submits, this fact immediately raises the question of the possibility of similar errors in his original notes and in his annual reports which we are not in a position to detect readily. Such a possibility naturally would weigh against the estimate of the value of that employee in the minds of administrative officers.

I believe that the scientific staff of this office on the whole has that appreciation of carefulness and accuracy which is fundamental to research in science. I believe also that each member of the staff is willing to accept responsibility for accuracy in manuscripts and to exercise the care necessary to insure this accuracy. Realizing that many of the men who prepare manuscripts in the field have no access to adding and calculating machines, we will check all tabular matter in such manuscripts during the process of editing, as an additional safeguard to the reputation of the employee, the Office, the Bureau, and the Department. All errors found will be brought to the attention of the author.

In order to fix the responsibility for errors of this kind made after the manuscript leaves the author's hands, the clerical staff has been instructed to attach to each annual report and other manuscript a sheet showing by whom typed and by whom compared with the original after typing. Errors made in typing and not detected in comparing naturally will weigh against the record of the clerical worker. I believe that all our clerical staff have that appreciation of accuracy which will make them willing to accept this responsibility.

By these means it is believed that those who are habitually accurate will be encouraged, and those who are less accurate will realize their need and opportunity for improvement.

Appreciating your hearty cooperation in this important cause, I am

Very sincerely yours,

C. R. BALL

Cerealist in Charge.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs). No report.

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor). No report.

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love). (October 12) Although the summer was unusually dry, there were enough showers early in September to permit preparation of ground and seeding of the fall grains. This was done in good season and the rod-row series and drill plats are doing very well now. The weather for a few days early in October was cool and growth was not rapid. However, it is now warming up again and rapid growth is taking place.

The hybrid material was sown in the plant breeding garden. This material consisted of some hybrids made specifically for their economic value and others for the study of the inheritance of characters. In order to prove finally the behavior of pubescent node as regards its linkage relation with beards, a considerable planting was made for this purpose.

In connection with the garden material, and in addition to the wheat hybrids, a number of selections of rye were sown which it is planned to protect by canvas covering from cross-pollination during the flowering period.

Preparation of material for seeding in California and in the greenhouse is now under way.

During the past week, A. E. Whiteside of Guelph, Ontario, was a visitor looking up methods in cereal improvement. Some new graduate students have registered to pursue research work along the line of cereal investigations, namely, D. G. Haylett from South Africa, T. E. Odland from West Virginia, and F. E. Stephens from Utah. Mr. Odland is working on a problem with oats, and it is possible that the other two men will confine their attention to some problems in wheat inheritance.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins). No report.

Agricultural Experiment Station, Baton Rouge (H. Stoneberg). No report.

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler). No report.

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer). No report.

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins). No report.

Agricultural Experiment Station, Ames (Investigation of Crown Rust of Oats, S. M. Dietz). No report.

Iowa State College, Ames (Barberry Eradication, J. H. Muncie). No report.

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert). (October 19) The weather is extremely unfavorable for our corn harvesting at the present time. It has been raining about all week.

I had a very pleasant visit yesterday with Dr. Eurlison, Prof. Hackleman, and the executive members of the Crop Improvement Association who came to Bloomington for a conference relative to seed corn certification.

Post Office Building, Urbana (Barberry Eradication, G. C. Curran). No report.

INDIANA

Purdue University Agricultural Experiment Station, Lafayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer). No report.

Purdue University Agricultural Experiment Station, Lafayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains). No report.

College of Agriculture, Purdue University, Lafayette (Barberry Eradication, K. E. Beeson). (October 18) Since July 1 the barberry survey in Indiana has been carried on in 18 counties and has netted 47,229 bushes. Practically all of these have been salted. A special effort has been made to investigate every local rust case that is reported. Frequently these reports are from leaf-rust areas, but several locations of barberries have been discovered in following leads from our publicity or from county agents. Through the questionnaires sent out by the State statistician, reports on the black-rust situation were requested from his 900 reporters. Judged by the answers, the State as a whole seems generally free from black rust, as less than 50 reported rust areas, the majority of which were leaf rust. However, each report is being investigated. Representatives of the soils and crops Department engaged in seed certification work have cooperated in reporting any rust cases observed. Through a monthly news letter of the division of botany extension to the county agents and vocational teachers, these people have been enlisted in active cooperation in this summer's rust observation.

Rust areas in close proximity to barberries have not been so numerous as those of last year nor has the damage been so severe. A few cases have been located where the yield was reduced to five or eight bushels per acre. A few bushes have been located on resurvey by heavy rust in their proximity. Re-checking has been done in each locality in which rust was abundant in close proximity to bushes last year or in previous years, and in each case the trees were found to be free from rust in 1923. A heavier general rust epidemic than usual was prevalent this year, but it did little damage. Apparently wind-borne infection had occasionally started rust early and this had spread in some cases to less than an acre, while in other cases it had covered the field with

moderate infection. It is interesting to note, however, that this scattered epidemic was prevalent in counties or groups of counties in which scattered barberries were found, and was most marked in a group of 8 counties on the western side of the State, while south of this was another in which very few barberries were located and the grain was practically free from rust.

The outstanding work of the summer has been the survey along the Tippecanoe and other rivers. Inspection was carried on for at least 150 miles from the mouth of the Tippecanoe to determine the occurrence of Berberis canadensis, and at the close of the summer's work 45,975 bushes had been found scattered along the cliffs that line the bank of this stream. These had not spread inland through the woods or along fence rows. Careful survey along at least 100 miles of the banks of other streams of the State has failed to reveal any other locations. The Wabash, into which the Tippecanoe empties, flows through its own flood plain, and no bushes were found along its shallow banks and in the overflow plains. The source of these bushes is problematical. The oldest settler interviewed had no theory but had known about the bushes for years although he did not know what they were. No bushes were found along the tributaries of the Tippecanoe, and as the men worked toward its source the patches of bushes became more scattered and the number in each group was less. Ordinarily from one to five thousand bushes would be found at a location. These had produced berries very sparingly and in many cases not at all. Salt was used successfully on a few locations at the rate of about two pounds a square foot. On small locations experiments were started with varying quantities of salt and thus far even one-half pound of salt to the square foot has given apparently successful results. Kerosene did not kill so quickly, and it was evidently affecting the vegetation three months after its application. Bushes grubbed from a large plat to the depth of one foot were sending up young growth abundantly enough to indicate the futility of this operation in eradicating Berberis canadensis. If the results of experiments with salt are satisfactory, the entire area will be treated next year.

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, J. W. Baringer). No report.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. E. Reddy). (September report) Early in September, 29 field assistants were employed in Michigan. The Michigan Agricultural College opened for registration September 24, but field assistants intending to attend college were permitted to register late. Our squad was reduced to ten men by September 30.

It is our aim to complete the farm-to-farm survey in Kent and Newago counties and then devote the remainder of the season to resurvey. Michigan's resurvey this fall will include visits to the locations made in the nine counties covered in the original survey of 1922. Because of the fact that detailed maps were made of each of the rural locations last season, there is every reason to believe that the resurvey will be accomplished speedily and efficiently.

In September barberry demonstrations were made at the State Fair and at the Saginaw and Grand Rapids Fairs. Two separate demonstrations were made at the State Fair and at Grand Rapids, one in cooperation with the State Department of Agriculture, the other with the Michigan Agricultural College. Demonstrations at fairs and in banks and business houses in general, in fact,

wherever people may see and make a study of the common barberry, are among the best methods of gaining the aid of the public. People are aware that the common barberry bush is being eradicated because it is a host of the rust, but they are not confident of their ability to identify the bush.

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab Investigations J. G. Dickson). No report.

Agricultural Experiment Station, Madison (Wheat Rosette and Take-All Investigations, H. H. McPinney). No report.

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. L. Walker). (October 20) The field force has been decreased to four men, most of the assistants having resigned about the middle of September to resume college studies.

The farm-to-farm survey of nearly 22 counties was completed this year. The force is now finishing several portions of counties and treating bushes in areas of escapes which had not been arranged for prior to this time. About 80,000 bushes and sprouts and many thousands of seedlings were eradicated from Wisconsin this season. We have used 120 tons of salt and 220 gallons of sodium arsenite solution since last spring. Most of the salt has been furnished by the Conference for the Prevention of Grain Rust and the State Department of Agriculture. The Conference also furnished all of the sodium arsenite.

Demonstrations were made at 35 county fairs in the area surveyed in 1923. The panels used were prepared in cooperation with the Conference. Those in charge of the demonstrations reported that much interest was shown and that a few leads to barberries were obtained.

Every barberry bush located in 1923 has either been dug or treated with sodium arsenite or salt. Several areas of escaped bushes were located. These did not contain more than a few hundred bushes, as the territory was farmed quite extensively.

Plots of rye and wheat for making observations on overwintering of rust have been planted at Madison and similar plots have been selected in fields in other sections of the State.

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Amoldt). No report.

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman). No report.

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander). No report.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger). (October 15) It has rained almost continuously from October 1 to date. This has interfered with harvesting of the sorghums. It has been impossible to do more than gather heads for seed next year.

The sorghums in the shocks have started to mould and sprout. There has not been enough dry weather to justify tearing down the shocks to allow the bundles to dry. While there has been no frost so far, it may be expected at any time. Wheat seeding has been delayed because of the excessive rains.

On October 2 quite a fall of hail accompanied the rain, shattering the leaves and ripe heads of the sorghums on the Station plats. Severe hail damage is reported west and southwest of Woodward. Because of the muddy roads, no one from the Station has traveled in the areas from which the damage is reported.

The maximum temperature for October to date was 75° on four different dates; minimum temperature, 42° on the 13th. A precipitation of 11 inches has been recorded for this month to date. Since September 11 the rainfall has been 20.52 inches.

KANSAS

Agricultural Experiment Station, Manhattan (J. H. Parker). No report.

Hays Branch Experiment Station, Hays (A. F. Swanson). (October 16) The rainfall for the first 15 days in October amounted to 3.89 inches. The total rainfall to date for the year is now 25.96 inches. Rain throughout the greater part of the last two weeks has interfered greatly with field work, particularly the harvesting of sorghums. The latter are from three to four weeks later than usual in maturing.

The varietal wheat project was seeded October 1. The wheat nursery could not be seeded until October 10 because of rains.

The last of the sorghums on the cereal project are being harvested today. About 40 plats were cut by hand because of the wet condition of the ground. Frost is expected at any time.

Wheat seeded October 1 or earlier is now covering the ground. Fall prospects for a wheat crop have never been better.

COLORADO

Akron Field Station, Akron (F. A. Coffman). (October 12) You probably will be interested to know that the crop prospects for winter wheat are far above normal at this time of the year. Since October 1 approximately one inch of rain has fallen. The wheat in the plats on fallow shows an excellent stand. Wheat on corn ground is rapidly emerging and will be fully emerged within another week. The nursery is in excellent condition. It is about half again as large as it was last year and is a pleasing sight, as the rows are already taking on a green appearance. Following the rains the weather was mild until yesterday, when it became suddenly colder. Last night we had the first killing frost of the season. Ice an eighth of an inch thick covered the water tanks. Today it is warm and pleasant again.

Agricultural College, Fort Collins (Barberry Eradication, E. A. Lungren).
No report.

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel). No report.

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, R. U. Cotter). No report.

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, L. D. Hutton).
No report.

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel).
No report.

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue). No report.

Dickinson Substation, Dickinson (R. W. Smith). (October 16) The rainy weather that prevailed during the latter part of September continued until October 11. The rainfall during the first half of October was about 0.75 inch. During the past three weeks, with the exception of two or three days, the grain has been too wet to thresh. There were many misty days when the total precipitation was light but sufficient to keep the grain shocks from drying out, and as a result some grain sprouted in the shock. Threshing at the Substation was completed before the rainy season, except a few increase plats and part of the nursery. The rest of the increase grain was finished today, and the rest of the nursery will be threshed during the next few days if the weather permits.

The winter grain in plats and nursery is in excellent condition and growing fast.

The second killing frost of the season occurred on October 13, with a minimum temperature of about 26°. The first killing frost occurred on September 13, with a minimum temperature of 30°.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.). No report.

MONTANA

Judith Basin Substation, Moccasin (R. W. May). No report.

State College of Agriculture, Bozeman (Barberry Eradication, W. H. Christopher). No report.

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe). (October 6) A rainfall of 0.51 inch on October 4 delayed all field operations. Threshing has been completed with the exception of a few nursery rows. In general the yields obtained from the plats and nursery were far above the average. Some exceptionally high yields were obtained from the oat plats.

A winter-wheat nursery of 750 rod rows was seeded on September 25. This nursery includes 70 of the leading winter-wheat varieties.

Dr. R. A. Oakley and H. L. Westover, of the Office of Forage-Crop Investigations, were recent visitors at the substation. J. M. Raeder of Moscow, Idaho, arrived October 4 to harvest and take notes on potato plats affected with mosaic.

Agricultural Experiment Station, Moscow (Stripe Rust Investigations, C. W. Hungerford). No report.

OREGON

Sherman County Branch Station, Moro (D. E. Stephens). No report.

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones). No report.

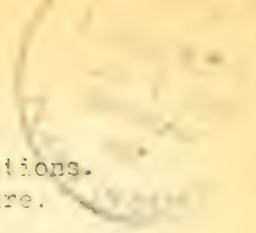
University Farm, Davis (V. H. Florell). No report.

Agricultural Experiment Station, Berkeley (F. N. Briggs). No report.

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations.
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)



Vol. 15

October 31, 1923

No. 27

Personnel (October 21-31) and Project Issue.

PERSONNEL ITEMS

Dr. Harry V. Harlan, agronomist in charge of barley investigations, writing from England on October 6, expected to sail from Marseilles October 19 on the steamship "Chambord", of the Messagerie line, for Djibuti on the Red Sea. From that port he expected to travel by railroad to Addis Abeba, the capital of Abyssinia, whose official name is hereafter to be Ethiopia. At Addis Abeba he will advise with officials and others concerning plans for his agricultural explorations in various parts of Abyssinia. Doctor Harlan intends to spend the greater part of the winter in Abyssinia, coming out probably the latter part of January.

Resignations of the following field assistants in barberry eradication have been accepted since August 31:

Illinois: Paul J. Byrd; Indiana: Otto G. Johanningsweier; Iowa: Ernest V. Abbot, Ralph W. Adamson, Charles E. Brookhart, Morrison H. Burns, Leo S. Fitzpatrick, Darrell Hill, James K. Kent, Edgar S. Morling, Elmer I. Rosenberger, Howard W. Sechrist, Marion A. Smith, Wilhelm G. Solheim, Guy A. Stockdale, James T. Thompson, and Marion E. Yount; Michigan: Justin C. Cash, John P. Cole, Muriel A. Daniels, Joseph B. Edmond, Milton J. Francis, James L. Kisman, George T. Kuhn, Carl H. Lenz, Herdis L. Lewis, Charles T. McIntyre, Leslie J. Meyer, Otto E. Meyer, Robert S. Rieman, Forrest C. Strong, Delbert Swartz, and Maurice R. Taylor; Minnesota: C. George Anderson, Frank A. Douglas, Robert M. Douglass, Lewis L. Dow, Stuart J. Dunn, Fddy R. Johnson, Spencer A. Mann, Harold P. Morris, Lloyd I. Nelson, Arthur G. Peterson, David W. Purdy, Dwight L. Quam, Herman A. Rodenhiser, Alfred L. Sjomall, George P. Steinbaur, Arthur W. Tzue, and Lawrence E. Wood; Montana: Herbert D. Cashmore, and Florence L. Markin; Nebraska: Leland C. Albertson, Harold M. Barnett, William E. Bruner, Thomas J. Fitzpatrick, David E. Lindstrom, John D. Moore, Rayburn W. Samson, Eaton M. Summers, and Edgar C. Tullis; North Dakota: Verne R. Archer, Lyril H. Arnold, Carl E. Baden, George B. Bairey, Christian G. Benson, Philip H. Boise, Harper J. Brush, Robert H. Carlson, Daniel J. Denis, Herbert W. Hartison, Hilmen E. Kjorlie, Ben F. Rumpeltes, Albert S. Severson, Adolph Wall, Charles F. Wells, Bert Wick; and Fred S. Willson; Ohio: Malcolm G. Anderson, Albert W. Brooks, Sylvester S. Humphrey, Thomas H. Jones, Edward S. Meyer, and Paul G. Minnowan; South Dakota: David V. Koyland, Donald T. Rice, Jesse C. Sculley, Frederick A. Seeman, Jr., William K. Soule, Julian I. Staven, and Frank F. Welch; Wisconsin: Allan D. Dickson, Everette L. Campbell, Carl W. Darschauer, Frank L. Gundersen, John T. Harrington, Howard R. Lathrope, George W. Longenecker, Marvin A. Schears, Walter J. Seymour, Henry Stevens, and Clem J. Weyker.

Maurice W. Buchanan was appointed field assistant in barberry eradication at Ames, Ia., effective October 16.

Miss Georgia M. Haughey, clerk to the State leader of barberry eradication, at East Lansing, Mich., resigned September 30.

Victor H. Sturlaugson, field assistant in the cereal investigations conducted at the Dickinson (N. Dak.) substation since April 16, resigned at the termination of September 30.

VISITORS.

Prof. Torao Teshima, of the Agricultural College of Tottori, Japan, and Prof. Koi Noda, of the College of Agriculture and Forestry of Formosa, were visitors October 24 to become acquainted with the cereal research conducted by this Office. Both gentlemen are students of genetics, plant breeding, agronomy, etc., at Cornell University. Within the next two years they will visit other American and European institutions to pursue their study of these subjects.

MANUSCRIPTS AND PUBLICATIONS

A manuscript entitled "An Effective Method of Inoculating Barley with Covered Smut", by W. H. Tisdale, has been approved for publication in *Phytopathology*

Memo. No. 2

October 31, 1923

ESTIMATING THE COST OF PREPARING MANUSCRIPTS

With each manuscript submitted, we are required to furnish an estimate of the total cost of its preparation, as indicated in memoranda from the Chief of Bureau on November 4, 1920, and May 25, 1922. It is not possible, of course, to make exact estimates, but the best possible approximate estimate should be made.

This total cost should not include the cost of conducting the experiments and gathering the information (taking and recording notes) upon which the manuscript is based.

It does include the time of the authors and their assistants in assembling the notes and preparing the original draft and all revisions of the manuscript.

It includes also the work of stenographers, typists, and computers in preparing the original manuscript and all revisions thereof.

It includes also the work of photographers, artists, authors, and others in preparing the illustrations (except work done in the Section of Illustrations, Office of Publications).

It includes also the time used in reading and correcting the various printers' and engravers' proofs by authors and clerks.

It does not include the work done in the Editorial Office of the Bureau of Plant Industry or in the Office of Publications of the Department, including the Section of Illustrations.

Estimates of the cost of preparation of revised editions should include only the cost of revision.

Please furnish the required estimate of cost of preparation with each manuscript submitted hereafter.

Please furnish also, as promptly as possible, similar estimates for the previously submitted manuscripts listed below.

Very sincerely yours,

(C. R. Ball)
Cerealist in Charge.

PROJECT REPORT

RUST INVESTIGATIONS

(Dr. H. B. Humphrey, Pathologist in Charge)

Preliminary Report on Locations of Buckthorn (*Rhamnus cathartica*)in the Upper Mississippi Valley States in 1923

By S. M. Dietz, Assistant Pathologist in Charge of Crown Rust Investigations

Through the cooperation of the State leaders of barberry eradication and their numerous scouts a preliminary survey for the locations of common buckthorn (*Rhamnus cathartica*) was made possible. The following table is a summary of the number and locations of buckthorn found in the season ending October 1, 1923.

State	Number of Plantings				
			Number of		Length of hedge in feet
	City	Country	Total	Bushes counted	Bushes not counted
Illinois	41	35	76	40,901	2,725
Indiana	1	1	2	106	
Iowa	15	23	38	3,393	3,626
Michigan		2	2	106	
Minnesota	347	31	378	9,394	8,690
N. Dakota	37	54	91	6,669	3,395
S. Dakota	175	19	194	23,335	14,072
Wisconsin	1	4	5	176	
Total	617	169	786	84,080	32,508

Some of the reports stated only the length of the hedge and not the estimated number of bushes. In Illinois, for instance, there were 40,901 bushes counted and, in addition, 2,725 feet of hedge in which bushes were not counted.

Minnesota ranks first in the total number of plantings. In the city of St. Paul, 245 plantings were reported. Field assistants in Colorado and Montana were unable to find a single bush. It is probable that there are few if any in these two States.

More plantings were found in the cities and towns than in the rural districts but the number of bushes in an individual planting was greater in the country.

This report is by no means complete, as several sections in Illinois have been reported where a detailed count of the total number of bushes would have taken far too much time. The writer also is familiar with a section around Delaven Lake, in Wisconsin, where this condition exists. One county in North Dakota also has been reported as having buckthorn on almost every farm.

CEREAL COURIER

Official Messenger of the Office of Cereal Investigations
Bureau of Plant Industry, U. S. Dept. of Agriculture
(NOT FOR PUBLICATION)

Vol. 15

November 10, 1923

No. 28

Personnel (November 1-10) and Field Station (October 16-31) Issue

PERSONNEL ITEMS

Dr. C. R. Ball, cerealist in charge, left Washington November 7 to attend the spring wheat conference at Minneapolis November 9 and 10. In Chicago, on November 12 and 13, he will attend the meetings of the American Society of Agronomy and confer with cooperating agronomists in attendance there. He also will consult with directors of agricultural experiment stations in attendance at the 37th annual meeting of the Association of Land-Grant Colleges convening in the same city November 13 to 15.

The appointment of Elmer A. Bezold, unskilled laborer in the cereal investigations conducted at Aberdeen, Idaho, was terminated October 31.

J. Allen Clark, agronomist in charge of western wheat investigations, Dr. C. E. Leighty, agronomist in charge of eastern wheat investigations, and Merritt N. Pope, agronomist in barley investigations, will attend the meetings of the American Society of Agronomy in session at Chicago November 12 and 13, and will confer with cooperating agronomists in attendance at these meetings.

MANUSCRIPTS AND PUBLICATIONS

A manuscript entitled "Varietal Experiments with Hard Red Winter Wheats in Dry Areas of the Western United States," by J. Allen Clark, was submitted November 8 for publication as a professional paper in the Departmental Bulletin series.

Galley proof of article entitled "An Effective Method of Inoculating Barley with Covered Smut," by W. H. Tisdale, was read October 25.

An article entitled "Climate and Wheat Yields at College Park, Md.," by W. J. Sario, appears in the Journal of the American Society of Agronomy, 15: 400-408. October, 1923.

The article entitled "Resistance in Rye to Leaf Rust, Puccinia dispersa Erikss.," by E. B. Mains and C. E. Leighty, was published in the Journal of Agricultural Research, v. 25, no. 5, p. 243-252. August 4, 1923. The number was received November 1.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs) (No report)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor) (November 5)

All seeding of fall-sown cereals was completed by November 1. The weather for October was unusually dry, and the germination of the grain was slow and irregular, particularly that of winter wheat. The fall stands are very good however. The barley plats should enter the winter with the best stand noted in the past five years.

On early seedings (September 15-20) of wheat and rye a small degree of leaf rust is present. The seed-treatment plats for the control of the smuts of barley and oats show reduced germination in several cases. Increased fall vigor is discernible in the oat plats treated with chlorophol, but the barley plats sown with seed treated with the same mercurial preparation show at present no beneficial results.

The extent of both plat and nursery seedings is greater than in past years. The wheat and rye nurseries for both rod-row and individual plant observations are much larger than usual.

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love) (No report)

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (No report)

Agricultural Experiment Station, Baton Rouge (H. Stoneberg) (No report)

MISSOURI

Agricultural-Experiment Station, Columbia (L. J. Stadler) (No report)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (No report)

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins) (No report)

Agricultural Experiment Station, Ames (Investigation of Crown Rust of Oats, S. M. Dietz) (No report).

Iowa State College, Ames (Barberry Eradication, J. H. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (November 1) Because of the early frost and continued wet, cool weather there is much rotted, chaffy, and immature corn. The percentage of such corn varies from less than 5 per cent in the highly resistant open-fertilized strains and good crosses to as much as 70 per cent in the very susceptible strains. Rotted ears apparently are practically all caused by Diplodia zeae.

Certain first generation crosses of resistant inbred strains have been yielding at the rate of 117.2 ± 1.6 bushels per acre, while the best open-fertilized seed under the same conditions yielded only 90.5 ± 1.0 bushels.

Harvesting operations are in full swing. The seed-corn situation for 1924 promises to be a serious one in this part of the country.

Post Office Building, Urbana (Barberry Eradication, G. C. Curran) (October report.) The State Leader spent the greater part of the month of October carrying on a farm-to-farm survey of Stark County. The property owners were very much interested in the campaign and anxious to cooperate in every way to further its success. One medium sized area of escapes was located. A number of good photographs were taken showing different phases of the work in Stark County.

Putnam County is now being surveyed and several large areas of escapes have been located and are under treatment.

Jo Daviess County was completely resurveyed this month. It was found that a large number of the bushes dug last year had sprouted. Resurvey is also being carried on in Ogle and Lake counties. The work in Lake County progresses slowly on account of the difficulty in locating absentee landlords of the many large estates along the lake shore.

The field men of the State Department of Agriculture are making excellent progress. They finished the survey of Ford County in October and are now surveying Iroquois County.

Several large areas of escapes have been found.

Efforts are being made to produce a new infection of stem rust on the overwintering plats in Illinois, as the rust that was present in August has all passed into the telial stage. A cooperative agreement has been made with the State Entomology Station at Centralia, Ill., whereby their experimental plats may be used for rust overwintering work.

INDIANA

Purdue University Agricultural Experiment Station, LaFayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer) (No report)

Purdue University Agricultural Experiment Station, LaFayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (No report)

College of Agriculture, Purdue University, LaFayette (Barberry Eradication, K. E. Beeson) (October report) Seven men were engaged in survey and resurvey work in October. The original survey of Daviess and Ripley counties was finished. Five men have spent considerable time following the streams in Wayne County and salting wild bushes, sprouts, and seedlings. Rust had spread from this wild area for 7 miles.

That resurvey of the wild areas will be absolutely necessary for a number of years in the future is evident by the large number of seedlings found in an area in Wayne County which had been grubbed in 1922. A hedge was grubbed in Henry County in 1919, and just across the road in a well-kept lawn, seedlings have appeared annually and have been kept down by the lawn mower.

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, J. W. Baringer) (November 1) In October approximately 25 per cent of each of the following counties was covered by an original farm-to-farm survey, namely, Knox, Licking, Erie, Franklin, and Clermont. All of Crawford County also was completed in the same manner. This brings our total number of counties covered by the original survey since Jan. 1, 1923, to fifteen and one-fourth. The total number of counties thus completed this year probably will reach 18 in November.

Six Federal and two State men are now doing original survey work in Ohio. Leaves on barberry bushes are intact so far despite the occurrence of heavy general frosts and local freezing temperatures. The leaves on almost all other desiduous shrubbery have fallen and of course the annuals are dead.

Clermont county is an Ohio River hill county in the southwestern part of the State. The survey of Clermont was undertaken at this time in order to obtain some data as to the number of locations existing in that type of country. So far more country locations have been listed in Clermont than were found in the survey of certain up state counties. One location, consisting of a purple barberry hedge about 65 yards long, and containing about 600 old bushes and a few escapes in nearby thickets, has been found about ten miles north of the Ohio River. If results of the survey in Clermont county are a fair indication we may expect some interesting situations in the survey of southern Ohio hill territory.

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) (October report) Eleven counties were covered in the original survey this season. Parts of Newaygo and Kent counties not covered in the farm-to-farm survey previous to October were completed during the month and the ten remaining field assistants were assigned to resurvey.

In the original survey 448 rural plantings were found, 209 of which were areas of escaped bushes. In these areas 68,687 bushes were found, averaging 19 areas of escapes to a county with 328 bushes to the acre. A total of 82,442 bushes and 165,958 seedlings have been eradicated this season.

The farm-to-farm survey of Michigan was begun in 1920 with the southern tier of counties. Since that time this survey has covered 31 counties or 4 1/2 tiers. The four lower tiers comprise 28 counties that are thickly

settled. Because of this condition and also because of the type of farms, the nature of the soil, and the general topography of that part of the State it was believed that many barberries would be found. This proved to be true. On the other hand, it was believed that few would be found in such counties as Montcalm, Mackinac, and Newaygo, in the fifth tier, where the soil is generally sandy, and where the sparsely settled rural sections are devoted largely to fruit farming. This surmise was far from being correct, however, as 98 rural plantings with 44,846 bushes were found in these three counties. If the conditions in the region to the north of these counties are similar, and there is reason to believe that they are, then the difficulties of eradication in Michigan will be greater than at first supposed.

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab Investigations, J. G. Dickson) (No report)

Agricultural Experiment Station, Madison (Wheat Rosette and Take-All Investigations, H. H. McKinney) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker) (No Report)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (October report) This year's field operations are likely to terminate at any time, but we would like to finish the salting of all remaining bushes in the Red Wing area. To date 14 tons of salt have been used on escaped bushes overlooked in a former survey, and on sprouts and seedlings in this area. In 1922 escaped common barberry was located in every square mile of a 43 square mile area around Red Wing, in Goodhue County. If salt had been used to kill these bushes considerable time and money would have been saved. This is true also in Olmsted, Fillmore, and Houston counties.

Not as many bushes were found in this year's original survey as in previous years. This was due to the fact that all of this year's original survey was conducted in the sparsely settled "cut-over" section of the State.

When the severe stem rust epidemic appeared all efforts were concentrated on a second survey of the Red River Valley. This survey proved fruitful in that we found sufficient bushes that had been overlooked on the first survey in that section to start an epidemic. The first report of a heavy infection on grain came from Wheaton. Three plantings were found in this vicinity. Six bushes were found next to a field of wheat which was almost a total loss. Similar instances were found in Big Stone, Wilkin, and Clay counties. The stem-rust epidemic had become so general in this area by the time the second survey was made that the spread of rust from individual plantings could not be traced.

From the results obtained this year all efforts ought to be concentrated toward establishing outposts in all the counties of the State next spring to detect the first appearance of rust. The system to be used will have to be perfected in the near future.

Our original or first survey is almost completed. Portions of a few counties still remain unsurveyed, but these are comprised of rough, unsettled country. Results obtained in a second survey of the Red River Valley show that a second survey is necessary in all the main grain-growing sections of the State. The probability of overlooking bushes the first time is such that we must make other systematic surveys for locating the last bush, unless a more practicable method can be devised.

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger) (November 1) There has not been so much rain in the last part of October as in the first part, but cool, cloudy weather has prevented much drying. The first killing frost of the season occurred on October 30. Feed crops in general are in bad shape. The feed which was cut early is spoiling in the shock and the later growth cannot be cut, and if cut can not cure properly.

The grain sorghum plats have been reshocked, but there will be mouldy grain even with ideal weather from now on, which we have no cause to expect.

All of the grain sorghums and broomcorn are harvested, with the exception of some F_3 hybrids which are to be studied in the field.

From present indications it is probable that there will be recorded this year the maximum annual precipitation for this vicinity. However, in spite of this high rainfall, this summer was one of the driest on record.

Maximum temperature for last half of October, 69° on the 17th; minimum temperature, 29° on the 30th and 31st. Precipitation for last half of October, 0.99 inch, or a total of 11.99 inches for the month. The precipitation for the year to date is 39.13 inches, and it is now raining.

KANSAS

Agricultural Experiment Station, Manhattan (J. H. Parker) (No report)

Hays Branch Experiment Station, Hays (A. F. Swanson) (November 1) Farmers in this vicinity are having difficulty in getting their feed crops harvested because of frequent rains. The first killing frost occurred October 20.

A great deal of volunteer wheat throughout the country is now being pastured. Wheat seeding is probably about three-fourths done. Fields of wheat that were seeded by October first have made good growth and are in good condition to go into winter.

The writer made a trip of about 60 miles west of Hays and found much corn. Many fields in this vicinity will average from 35 to 50 bushels per acre. Corn huskers are getting 6 cents a bushel. Corn is selling for 58 cents per bushel in the ear on the basis of 75 pounds per bushel.

The acreage of wheat in this section is about as large this year as in former years.

COLORADO

Akron Field Station, Akron (F. A. Coffman) (October 29) The weather in the month of October has been unusually favorable to winter wheat. There has been much more than the average precipitation, and until the last ten days of the month the temperatures were very favorable to crop growth. There have been two snow storms so far and more snow may be expected before the end of the month. At present the ground is covered with snow and the surface is frozen.

Field operations progressed favorably until October 22, but since that time wintry conditions have almost prevented outside work. The seeding of the winter-wheat plats was completed October 16 with the last rate-date seeding. This has not emerged so far. All other wheat is up to good stands. As a whole the fall condition of wheat in this section is excellent.

The corn in the breeding plat has been harvested and stored for the winter. Most of it will be shipped to Washington for preparation for planting. The varietal corn has not yet been harvested but possibly will be husked within the present week, weather permitting. This will not be a long operation as the crop is a light one.

The stand data has been taken on about 75 per cent of the nursery and 50 per cent of the field plats. A few days of favorable weather will complete the outside work of the Cereal Office at Akron for the season of 1923.

Considerable time has been spent in the past few weeks writing the annual report. The data for the report probably will be very largely assembled by the first few days of November.

Agricultural College, Fort Collins (Barberry Eradication, E. A. Lungren) (November 1) Barberry eradication to the end of Oct. 31 has completed the field work for this season. The last county resurveyed was Denver, in which nine new properties were found containing 39 bushes. These were all cut off and treated. On 30 properties 90 sprouts also were found. Of these 26 were treated and four dug.

Resurvey activities have consisted of treating and digging sprouting bushes, and in addition, looking out for seedlings and escaped bushes. In several areas, especially in the country, where large hedges have been removed, we found seedlings and escapes. Resurvey of such areas in the spring has enabled us to decrease this number.

Packets containing material for educational purposes have been mailed to many of the agriculture teachers to be used for class work. Rust material is also being sent in from various stations in the State for germination and inoculation tests.

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel) (No report)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, R. U. Cotter) (No report)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, L. D. Hutton) (No report)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel) (No report)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue) (No report)

Dickinson Substation, Dickinson (R. W. Smith) (No report)

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.) (October 17; The weather of the first half of October was generally cloudy and cool.

The late Argentine flax in the varietal plats and the June 1 and June 15 seedlings of the date-of-seeding-and-tillage experiment were thrashed October 4. This completed the plat thrashing for the season.

Thrashing of the flax nursery rows was completed October 5. Thrashing of the flax plant selections and seed treatment experiment was postponed because of wet weather and still remains to be done.

Maximum temperature for the period was 71° October 3 and 15; minimum 26°, October 12; Precipitation 0.53 of an inch. The first severe killing frost occurred October 12, though a temperature of 32° with a light frost was recorded October 4.

MONTANA

Judith Basin Substation, Moccasin (R. W. May) (October 19) I inclose herewith preliminary reports on the yields of wheat, oats, barley, and flax in the varietal experiments at the Judith Basin Substation in 1923. The season favored late maturing varieties.

Winter Wheat Varieties

Variety	C. I. No.	Yield (Bu. per acre)
(Average of 4 plats)		
Khar'kof	1583	35.3
Montana No. 36	5549	34.8
Kanmont	6700	34.6
Awnless hybrid 166B1-6	6935	33.7
Turkey	1558	32.5
Kanred	5146	32.1
Wicc. 11.825	6680	29.7
Puffum No. 17	3330	27.1
Minturki	6155	25.6
Snackman	4430	25.0
Minhardi	5149	23.5
Blacknull	6251	19.7

(Single plats)

Awnless hybrid 166B14-2		35.7
Awnless hybrid 163E3-10		31.0
Turkey parent 1667		31.0
Turkey Sel. 3035-159		31.0
Khar'kof Sel. 1442-343		30.1
Khar'kof parent 167B		29.2
Awnless hybrid 166P11-7		27.3
Awnless hybrid 164A10-9		21.6
Kanred X Marquis (bulk F ₅)		20.7
Hissar	4843	20.2

Spring Wheat Varieties

Variety and Group	C. I. No.	Yield (Bu. per acre)
(Average of 4 plats)		
<u>Hard Red Spring</u>		
Hayes Braxton	2874	29.8
Fitchner	4800	29.2
Lafoga	6679	29.0
Power	3697	28.4
Marquis	3641	24.6
Red Bobs	6255	24.0
Kota	6248	23.8
Redsask	6794	23.6
Preston	3031	23.3
Ruby	6047	17.3
<u>White</u>		
Baart	1697	27.5
Federation	4734	24.4
White Federation	4951	23.4
Quality	6607	17.7
Hard Federation	4733	17.1

Spring Wheat Varieties (Cont'd)

Variety and Group	C. I. No.	Yield (Bu. per Acre)
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(Average of 4 plats)

Durum

Kubanka No. 74	---	28.2
Monad	3320	25.8
Nodak	6519	25.7
Kubanka	1440	25.6
Acme	5284	25.4
Peliss	1584	22.7
Kahla	5529	20.6
Awnless (K 144)	---	19.6

(Single Plats)

-----	3774	34.2
Kanred X Marquis B5-14 (awnless)	---	32.5
Barbassar	3727	31.7
Kanred X Marquis B3-14 (awned)	---	30.8
Kanred X Marquis (bulk F ₅)	---	30.8
Gemma	5007	30.0
Turcicum	3741	29.2
Canadian Marquis	---	24.2

Oat Varieties

Variety	C. I. No.	Yield (Bu. per Acre)
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(Average of 4 plats)

Early:

Richland	787	64.5
Sixty-Day	165 (4P4)	61.3
Sixty-Day	165	60.6
Albion	729	53.9

Midseason:

Banner	751	75.8
Swedish Select	134	69.5
Iogren	2024	68.4
Silvermine	714	66.8
Dakota No. 4	753	64.9
Danish	441	64.1
----	357-1	63.3
Lincoln	738	61.4
Victory	742	59.8

(Single plats)

Early:

(From Prince Edward Island)	617	73.4
(From Russia)	716	70.3
(From Siberia)	828	67.2
(From Siberia)	749	60.9
(From Siberia)	829	56.3

Barley Varieties

Variety	C. I. No.	Yield (Bu. per Acre)
(Average of 4 plats)		
Hannchen	531	52.6
Horn	926	52.1
Svanhals	187	45.6
Franconian	680	44.5
White Smyrna	195	44.0
Hurst	1304	41.2
Meloy	1176	39.3
Coast	690	38.0
Club Mariout	261	31.0
Himalaya	620	12.5*

(Single plats)

Manchuria	354	48.0
Six-Row July	1563	45.3
Nepal	595	21.7

*Severely injured by hail.

Flax Varieties

Variety	C. I. No.	Yield (Bu. per Acre)
(Average of replicated plats)		
N. D. R. No. 114	13	17.4
Reserve	19	15.9
Primost	47	15.6
N. D. R. No. 73	14	15.4
Damont	3	15.0
Montana Common	6	14.8
N. D. R. No. 52	8	14.8
Fargo Common	18	14.8

Flax-Wheat Mixtures

	Yield	
	Flax	Wheat
Flax 15, wheat 20	7.5	12.5
Flax 15, wheat 30	5.6	19.6
Flax 25, wheat 20	8.8	9.6
Flax 25 -----	12.5	---
Wheat 60 -----	---	32.5

(October 31)

If the weather remains favorable all field work should be completed in about a week. The field threshing was finished a few days ago. The crew of men are now hauling in corn fodder. Potato digging is one of the major operations which remain to be done.

We have had several snow flurries accompanied with low temperatures since October 20. The minimum temperature recorded was 7 degrees on the morning of the 29th. The precipitation for the month has been very light, only 0.48 of an inch having been recorded, as compared to 1.09 inches as the average precipitation for October.

I am inclosing a preliminary report of yields obtained from the various furrow-drill experiments conducted at the Judith Basin Substation in 1923.

Straw-Mulch Experiment

Furrow Drill

Ordinary Drill

Rate of Straw Mulch	Yield (Bu. per acre)	Yield (Bu. per acre)
No straw	37.5	31.2
2 tons	30.8	26.8
Average	34.2	29.0

Furrow-Drill Rate-and-Direction-of Seeding Experiment

Furrow Drill

Ordinary Drill

Rate of Seeding per Acre	Yield (Bu. per acre)	Yield (Bu. per acre)
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North and South Direction

2 pecks	34.2	36.9
3 pecks	35.8	38.7
4 pecks	40.0	39.7
5 pecks	42.5	42.9
Average	38.1	39.6

East and West Direction

2 pecks	30.2	19.9
3 pecks	31.5	21.8
4 pecks	33.4	25.0
5 pecks	32.7	28.4
Average	32.0	23.8
Grand Average . .	35.0	31.7

Furrow Drill Harrowing ExperimentWinter WheatFurrow DrillOrdinary DrillYield
(Bu. per acre)Yield
(Bu. per acre)

Harrowed

28.8

Not harrowed

28.9

Average . . . 28.85

Spring Wheat

Harrowed

28.5

Not harrowed

28.8

Average . . 28.7

32.1

32.1

32.1

State College of Agriculture, Bozeman (Barberry Eradication, W. N. Christopher) (No report)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe) (No report)

Agricultural Experiment Station, Moscow (Stripe Rust Investigations, C. W. Hungerford) (No report)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (October 20) There was no rain in the Columbia Basin of Oregon in September until nearly the end of the month. From the 23rd to the 25th, 0.63 of an inch was recorded at Moro. This was just enough to make the moisture meet on good summer-fallow, so that all grain sown the latter half of September has emerged with good stands. In October to date there has been 0.91 of an inch precipitation. Temperatures have been about normal, and the winter wheat that has been sown is in excellent condition. There will be much winter wheat sown late in this section because of weedy summer-fallow. Unusual rains in July caused weeds to grow on the fallow, and farmers were unable to clean their summer-fallow of weeds because they were busy with harvest. This work is now being done and some fields are so weedy as to require a great deal of labor to get them in shape for seeding.

All seeding on the substation is finished except the later sowings in the rate-and-date experiment. Tillage, rotation, and varietal plats have all emerged with good uniform stands.

A greatly enlarged winter-wheat nursery has been sown, including a large number of hybrids between smut-resistant wheat varieties and our present commercially-grown varieties. The winter-wheat nursery includes more than 4,300 rod rows. A winter-wheat nursery also has been sown near Pendleton, in Umatilla County, near Ione, in Morrow County, near Dufur, in Wasco County, and near Kent in Sherman County.

An excellent opportunity was afforded this year to obtain information on the bunt-resistance of winter-wheat varieties. The following table shows the percentage of smut and yields of single rod rows of a number of winter-wheat varieties and selections:

<u>Name</u>	<u>Per Cent Smut</u>	<u>Yield of Single Row (Bu. per acre)</u>
Kharkof (check)	---	37.7*
Hybrid 143	76.6	---
Banner Berkeley Sel.1	0.9	21.0
" " Sel.2	.2	27.0
" " Sel.3	2.3	26.5
" " Sel.4	1.3	24.0
" " Sel.5	2.2	29.0
" " Sel.6	.3	26.0
" " Sel.7	.3	28.0
" " Sel.8	.0	36.0
" " Sel.9	.0	29.0
" " Sel.10	.0	26.0
" " Sel.11	.1	25.0
" " Sel.12	.0	24.0
" " Sel.13	.0	27.0
" " Sel.14	.0	34.0

*Average yield of three rows.

White Odessa (4655-1)	1.0	31.5
" " (4655-2)	1.0	33.5
" " (4655-3)	1.9	32.0
" " (4655-4)	1.5	32.0
" " (4655-5)	1.9	35.0
" " (4655-7)	3.8	39.0
" " (4655-8)	1.6	35.0
" " (4655-9)	1.9	33.0
" " (4655-10)	2.2	42.5
Kharkof (check)		38.0*
White Odessa (4651-1)	0.0	30.0
" " (4651-2)	3.4	41.0
" " (4651-3)	1.5	35.0
" " (4651-4)	0.0	38.0
" " (4651-5)	0.0	34.0
" " (4651-6)	0.0	34.0
" " (4651-7)	0.0	41.5
" " (4651-8)	0.0	40.5
" " (4651-9)	0.0	45.5
" " (4651-10)	0.0	42.0
Martin Amber (4463)	0.0	35.0
Red Hussar (4843)	0.0	38.0
Wash. Hybrid 3-1	58.7	---
" " 3-2	58.1	---
Florence	21.4	11.0

*Average yield of three rows.

<u>Name</u>	<u>Per Cent Smut</u>	<u>Yield of Single Row (Bu. per acre)</u>
Turkey (289-5)	1.5	45.0
" (1558-A)	8.4	28.0
" (1888-B)	13.6	33.0
Sherman (4430-1)	.1	41.0
" (4430-2)	.3	40.0
" (4430-4)	.2	39.0
Kharkof (check)		37.8*
Crimean (2570A)	.4	32.5
" (2578-1)	.1	27.5
" (2908)	.0	26.0
" (3050)	7.4	36.0
Hybrid 1-3 (Not counted)		---
Crimean (1571C Wh.)	1.5	40.5
" (1571C purple)	.1	42.0
" (2903-5)	4.8	33.0
Argentine (1569-2)	1.8	44.0
Turkey X Bd. Minn. No. 47	3.2	27.0
" " No. 48	.8	44.5
G176-9	53.2	11.0
G176-10	52.1	31.0
G242-2	21.9	36.0
H242-5	19.5	30.0
Wn. 13001	50.3	29.0
Bumper Crop	65.3	20.5

*Average yield of three rows.

Hybrid 128	97.0	
<u>Turkey X Florence</u>		
G326W-1	0.0	38.5
G326W-2	0.0	27.5
G326W-3	0.0	37.0
G326W-4	.1	38.0
G326W-6	0.0	32.0
G326W-8	.1	40.5
G326W-12	.3	37.0
G314W-1	.3	33.0
G314W-2	.4	27.0
G314W-4	.0	24.5
G314W-5	1.2	32.0
G314W-8	.2	37.5
Kharkof (check)		40.0
" "		36.0
<u>Turkey X Florence</u>		
G314W-10	.5	27.5
G332-2	.3	30.0
G332-4	3.4	23.0
G332-8	.3	30.0
G334-1	.3	21.0
G316	.3	26.0
G324	.0	22.5

<u>Name</u>	<u>Per Cent Smut</u>	<u>Yield of Single Row (Bu. per acre)</u>
<u>Turkey X Florence</u> (Cont'd)		
G350	.6	32.5
Ridit	.3	34.0
G314 R	.2	23.0
Hoenheim	1.2	27.0
Hybrid 143	93.1	---
Kharkof (check)	---	42.7*
Wasco Hybrid #2	93.4	---

*Average yield of three rows.

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones) (No report)

University Farm, Davis (V. H. Florell) (No report)

Agricultural Experiment Station, Berkeley (F. N. Briggs) (No report)

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CEREAL COURIER

Official Messenger of the Office of Cereal Investigations
Bureau of Plant Industry, U. S. Dept. of Agriculture
(NOT FOR PUBLICATION)

Vol. 15

November 20, 1923

No. 29

Personnel (November 11-20) and Field Station (October 1-15) Issue

PERSONNEL ITEMS

Dr. C. R. Ball, cerealist in charge, returned from Chicago November 16. On the 19th he left for St. Paul to attend the third annual meeting of the Conference for the Prevention of Grain Rust to be held November 21 at the University Farm of the Minnesota Agricultural Experiment Station. At this meeting reports will be read on the progress made this year in the eradication of the common barberry bush. Plans for the continuation of the eradication program in 1924 will be discussed. Doctor Ball also will attend the Fiftieth Anniversary celebration of The Northwestern Miller, to be held in Minneapolis November 22, 23, and 24.

N. Ray Carmichael, assistant in barberry eradication, left Washington November 17 to attend the conference of barberry assistants at St. Paul, Minn., November 21.

Dr. H. B. Humphrey, pathologist in charge of cereal-disease investigations left Washington November 18 for St. Paul, Minn., to attend the third annual meeting of the Conference for the Prevention of Grain Rust and to confer with State leaders of barberry eradication and with State officials and pathologists concerning the results of the past year in barberry eradication and plans for its continuation in 1924. He also will visit Madison, Wis., La Fayette, Ind., Ames, Ia., and Bloomington, Ill., to discuss with State officials problems connected with cereal-disease investigations. He will return November 26.

Dr. F. E. Kempton, pathologist in charge of barberry eradication, left November 17 for St. Paul, Minn., to discuss with State leaders of barberry eradication and others the results of the operations of the season just ended and to make plans for the continuation of the campaign next year. Doctor Kempton will return to Washington November 26.

C. H. Kyle, agronomist in corn investigations, will leave Washington about November 26 for Baton Rouge, La., to collect and analyze data from corn experiments conducted in cooperation with the Louisiana Agricultural Experiment Station and to make plans for next season's experiments. He also will consult officials of the Texas, Arkansas, and Tennessee agricultural experiment stations concerning corn problems. Mr. Kyle expects to return to Washington about December 20.

Dr. E. C. Stakman, associate plant pathologist at the Minnesota Agricultural Experiment Station, and agent in the cooperative cereal-disease investigations with this office, who has been in Australia for the past two months studying rust conditions in the grain-growing regions of that country, writes from Suez on October 26 that he will be back in the United States about December 1. He expected to spend a week in Egypt and a few days in Paris in consultation with agricultural specialists before sailing from England for the United States.

The temporary appointment of Miss Catherine A. Wolfe, typist in the Office since February 12, 1923, was terminated November 11.

MANUSCRIPTS AND PUBLICATIONS

Galley proof of article entitled "Varietal Resistance in Winter Wheat to the Rosette Disease," by R. W. Webb, C. E. Leighty, G. H. Dungan, and J. B. Kendrick, for publication in the Journal of Agricultural Research, was read November 20.

The article entitled "Specialized Varieties of Puccinia glumarum and Hosts for Variety Tritici" by Charles W. Hungerford and C. E. Owens, has been published in the Journal of Agricultural Research, v. 25, no. 9, p. 363-401. September 1, 1923. The number was received November 16. This article is based on results obtained from investigations conducted cooperatively with the Idaho and Oregon agricultural experiment stations.

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FIELD STATION CONDITION AND PROGRESSHUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs) (No report)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor) (No report)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love)
(No report)HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (No report)Agricultural Experiment Station, Baton Rouge (H. Stoneberg) (No report)

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (No report)

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (No report)

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins) (No report)Agricultural Experiment Station, Ames (Investigation of Crown Rust of
Oats, S. M. Dietz) (No report)Iowa State College, Ames (Barberry Eradication, J. H. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investi-
gations, J. R. Holbert) (No report)Post Office Building, Urbana (Barberry Eradication, G. C. Curran)
(No report)

INDIANA

Purdue University Agricultural Experiment Station, La Fayette (Corn
Root, Stalk, and Ear Rots, G. N. Hoffer) (No report)Purdue University Agricultural Experiment Station, La Fayette (Leaf
Rust Investigations, H. S. Jackson and E. B. Mains) (No report)College of Agriculture, Purdue University, La Fayette (Barberry Eradi-
cation, K. E. Beeson) (No report)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, J. W. Baringer) (No report)

MICHIGAN

Agricultural College, East Lansing (Barberry Eradication, W. F. Reddy) (No report)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab Investigations, J. G. Dickson) (No report)

Agricultural Experiment Station, Madison (Wheat Rosette and Take-All Investigations, H. H. McKinney) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker) (No report)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Breeding Investigations, O. S. Aamodt) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (No report)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger) (November 17) Since the rain has ceased we have had a period of fair weather. There is usually a heavy frost in the morning, but later in the day conditions are good for drying the bound crops. Heading preparatory to threshing is in progress. The latter operation probably will be very dusty and dirty; yields will not be up to average.

Farmers are heading their milo and kafir. After heading, it is the general practice to turn stock into the fields to pick up what they can.

Wheat that was sown early is making only slow growth. Much of the wheat was sown around the first of this month.

Maximum temperature for November to date, 70° on the 9th, 10th and 11th; minimum, 31° on the 6th. Precipitation, 0.65 inch, in five measurable showers.

KANSAS

Agricultural Experiment Station, Manhattan (J. H. Parker) (No report)

Hays Branch Experiment Station, Hays (A. F. Swanson) (November 16) The rainfall for the first 15 days of November amounted to 0.29 inch. The weather has been mild and winter wheat is making a satisfactory growth. A few farmers are still seeding wheat, but the bulk of the crop was put in at the proper time. The Hessian fly threatens to be a menace, however, wherever volunteer wheat is growing. Volunteer wheat is making excellent pasture this fall.

Sorghum threshing was completed on the cereal project yesterday. I have not had time to work out the yields. The yield of the Blackhall kafir group promises to be large, some of the best varieties running as high as 20 bushels to the acre. The yields of the milo and feterita group fell below the average.

Straw was applied today to the plats of winter wheat included in the "top dressing" experiment.

The writer spent a part of last week in Ness County, about 50 miles southwest of Hays. Much corn and sorghum was seen at community fairs, at which a number of excellent exhibits were shown. A variety of yellow dent corn well adapted to western Kansas was found in Ness county. In this section, as well as in all of northwestern Kansas, there are good feed crops. There also is an abundance of good corn which extends into Nebraska and eastern Colorado. Corn huskers are in great demand.

There has been no apparent reduction in the wheat acreage this year, so far as the writer was able to observe in a cross-country drive over this part of the wheat belt.

COLORADO

Akron Field Station, Akron (F. A. Coffman) (No report)

Agricultural College, Fort Collins (Barberry Eradication, E. A. Lungren)
(No report)

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel) (No report)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, R. U. Cotter) (No report)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, L. D. Hutton)
(No report)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel)
(No report)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue) (No report)

Dickinson Substation, Dickinson (R. W. Smith) (November 15) The weather for the first half of November was unusually mild and calm with minimum temperatures slightly below freezing. The precipitation was 0.23 inch with no snow, although a light snowfall that soon melted away occurred the latter part of October.

Threshing operations in this county are almost completed, although delayed by much wet weather in September and early October, followed by considerable dry, mild weather.

More fall plowing has been done this fall than usual. Considerable winter rye has been sown since the rains and the crop is in good condition.

Corn gave good yields in this county and in general was good throughout the State. The acreage of corn doubtless will be much increased next year. Some corn yet remains to be husked. The type of corn grown here is slow husking, the flint corn having ears close to the ground, and the dent varieties that mature here are inclined to sucker and produce ears too near the ground for convenient husking.

A cross between two high-ear selections of Northwestern dent produced at this substation ranked second in yield among 8 varieties of dent corn, being exceeded in yield by Payne's white dent and a few of the flint varieties.

The 16 corn varieties grown in the field varietal test this year gave such high yields that we hesitate to announce them lest our veracity be questioned. When husked and weighed about the middle of September, two 25-pound samples of each variety were stored in a dry, well ventilated place to dry. On November 8 when these samples were weighed again a few of the later varieties contained moisture that might be removed by further drying. All varieties were stored again and when fully dry will be weighed and the yields reported. Based on the weights on November 8, computed at 70 pounds per bushel of ear corn, the yields ranged from 48.9 bushels per acre from Minn. No. 13 to 74.5 bushels per acre with Rainbow flint. The latter being a late variety, its yield will be reduced by further drying. Several of the well-matured varieties yielded more than 60 bushels per acre and the average yield was slightly below 60 bushels.

Some farmers are running their shocked corn through a threshing machine as a quick method of husking and shelling the corn and shredding the stover. Corn is being bought and shipped from Dickinson for the first time in its history.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.)
(No report)

MONTANA

Judith Basin Substation, Moccasin (R. W. May) (No report)

State College of Agriculture, Bozeman (Barberry Eradication, W. N. Christopher) (No report)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe) (No report)

Agricultural Experiment Station, Moscow (Stripe Rust Investigations, C. W. Hungerford) (No report)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (No report)

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones) (November 7) The weather was ideal for rice harvest this year, except for one heavy shower on October 6. We finished threshing and warehousing the Station rice on October 30.

The yields this year were much lower than for the 1922 crop. The low yields were due, in part at least, to the cool weather of the early spring and summer months. The rice lacked vigor and as a result produced low acre yields.

I believe that nearly all, if not all, of the commercial rice crop is now threshed and warehoused. The commercial growers with whom I have talked since threshing all report lower acre yields than they had expected.

Quite a large percentage of the rice grown in California this year was sown broadcast and continuously submerged to control water grass. Some have attributed the low yields to this method of irrigation. However, in comparative tests at the Station the plats continuously submerged after broadcasting produced, in most cases, higher acre yields than plats irrigated in the old way. It appears, therefore, that the low yields were due largely to old land and unfavorable growing weather.

The rice market, while not very active, is absorbing some rice at reasonable prices. Paddy rice has been sold since harvest at from \$2.60 to \$5.00 per hundred.

University Farm, Davis (V. H. Florell) (No report)

Agricultural Experiment Station, Berkeley (F. N. Briggs) (No report)

CEREAL COURIER

Official Messenger of the Office of Cereal Investigations.
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15

November 30, 1923.

No. 30

Personnel (November 21-30) and Project Issue.

DATE OF ISSUANCE OF CEREAL COURIER

Beginning with this issue, the Cereal Courier will appear semimonthly, the issues being dated the 15th and last days of each month. This semimonthly issuance will be continued until April 1, on which date the issuance of numbers at 10-day intervals will be resumed.

PERSONNEL ITEMS

The appointment of Mrs. Agnes C. Anderes, clerk in the cooperative cereal-disease investigations conducted at Berkeley, Calif., was terminated October 18 without prejudice.

Dr. E. C. Stakman, associate plant pathologist at the Minnesota Agricultural Experiment Station, and agent in the cooperative stem-rust investigations of this Office, who left for Australia in July to attend the Sessions of the Pan-Pacific Science Congress, returned to New York on the "Leviathan", on November 26 and arrived in Washington on November 27 to consult with the cerealists and cooperating pathologists. He gave a brief report of his trip before the office seminar November 28.

Luke P. Vassar, of St. Paul, Minn., was appointed agent November 17 to assist in the cereal experiments conducted in cooperation with the Minnesota Agricultural Experiment Station at University Farm.

MANUSCRIPTS AND PUBLICATIONS

A manuscript entitled "Experiments with Flag Smut of Wheat and the Causal Fungus, Urocystis tritici Koern.," by Miss Marion A. Griffiths, was submitted November 21 for publication in the Journal of Agricultural Research.

A manuscript entitled "Studies on the Parasitism of Urocystis tritici Koern., the Organism Causing Flag Smut of Wheat," by Robert J. Noble, was submitted November 21 for publication in the Journal of Agricultural Research.

Galley proof of Department Bulletin 1197, entitled "Experiments with Emmer, Spelt, and Einkorn," by John H. Martin and Clyde E. Leighty, was read November 27.

Page proof of Department Bulletin 1183, entitled "Milling and Baking Experiments with American Wheat Varieties," by J. H. Shollenberger and J. Allen Clark, was read November 24.

The article entitled "Prolific and Other Dwarf Oats," by T. R. Stanton, was published in The Journal of Heredity, v. 14, no. 7, p. 301-305. (October, 1923) November 5, 1923.

AMENDMENT TO THE FISCAL REGULATIONS.

According to Memorandum of the Secretary No. 457, dated November 20, 1923, and effective July 16, 1923 paragraph 33 (k) of the Fiscal Regulations of the Department is hereby amended to read as follows:

33. ACTUAL TRAVELING EXPENSES.

(k) When specifically authorized actual operating expenses, (gasoline and oil) or mileage rates not exceeding 3 cents per mile for a motorcycle and 7 cents per mile for an automobile, for the use of personally owned vehicles in official work. Each account covering actual operating charges or mileage rates should be supported by a certificate setting forth (a) date of travel, (b) points between which performed, (c) actual number of miles traveled, (d) hour of departure from and arrival at official station, (e) that the distances stated are to the best of the employee's knowledge and belief correct and that no public or regular means of transportation could be used as advantageously in the interest of the Government. Certificates covering actual operating charges should indicate in addition (f) that the charges for gasoline and oil were arrived at by actual measurement at both the beginning and end of the official trip, and those covering mileage rates should show (g) the rate per mile and total charge. In addition to actual operating expenses (gasoline and oil), employees using their own vehicles in official work may be reimbursed for storage charges when storage becomes necessary at points other than official headquarters, and necessary tolls and ferry charges. Where it becomes necessary, by reason of breakdowns, impassable roads, or miring to have vehicles towed partly, or, under extraordinary circumstances, entirely to destination, reimbursement may be made for reasonable expense of such towage, but all such charges must be fully explained and each case will be considered on its merits. Employees operating personally owned vehicles on a mileage basis will not be reimbursed in addition for storage, tolls, ferry, or towage, charges.

CEREAL COURIER

Official Messenger of the Office of Cereal Investigations
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)
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Vol. 15

December 15, 1923.

No. 31.

Personnel (Dec. 1-15) and Field Station (Nov. 16-30) Issue.
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PERSONNEL ITEMS

The appointment of Ira W. Clokey, collaborator of this Office in the investigations of crown rust of oats and related grasses conducted in cooperation with the Iowa Agricultural Experiment Station, was terminated November 30, Mr. Clokey having completed his special investigations.

Miss Frances Feehan, of Ithaca, N. Y., was appointed clerk in the cooperative cereal investigations at Ithaca, effective December 1.

Miss Bernice L. Waterman, clerk in the Office of the Secretary of Agriculture since September 1, 1923, was transferred on December 1 to East Lansing, Mich., to assist the State leader of barberry eradication in his office duties. Miss Waterman will fill the vacancy caused by the resignation, on September 30, of Miss Georgia M. Haughey.

Gustav A. Wiebe, junior plant breeder in charge of cereal experiments at the Aberdeen Substation, Aberdeen, Idaho, came to Washington November 25 to prepare his annual report on the experiments of the past year and to confer with crop specialists.

VISITORS

Dr. Christine M. Berkhout, a pupil of Dr. Johanna Westerdijk, professor of plant pathology, Phytopathologisch Laboratorium, "Willie Commelin Scholten," Baarn, Netherlands, was an office visitor December 4 and 5.

MANUSCRIPTS AND PUBLICATIONS

A paper entitled "Comparative Value of Kota and Marquis Wheats for Milling and Breadmaking," by J. Allen Clark, agronomist in charge of western wheat investigations of this Office, and J. H. Shollenberger, grain supervisor in charge of milling investigations, Grain Division, Bureau of Agricultural Economics, was approved December 1 for publication in The Northwestern Miller.

A paper entitled "Student's Method for Interpreting Paired Experiments," by Dr. H. H. Love, of the Department of Plant Breeding, Cornell University, and Dr. A. M. Brunson, agent, Cereal Investigations, was approved December 5 for publication in the Journal of the American Society of Agronomy.

A paper entitled "Nocturnal Production of Conidia by Sclerospora graminicola," by William H. Weston, Jr., was transmitted December 5 for publication in the Journal of Agricultural Research.

An article entitled "The Blooming of Wheat Flowers," by C. E. Leighty and W. J. Sando, was submitted December 12 for publication in the Journal of Agricultural Research.

An article entitled "Effects of the Modified Hot Water Treatment on Germination, Growth, and Yield of Wheat," by V. F. Tapke, was submitted December 15 for publication in the Journal of Agricultural Research.

Galley proof of article entitled "Intracellular Bodies Associated with the Rosette Disease and a Mosaic-Like Leaf Mottling of Wheat," by H. H. McKinney, S. H. Eckerson, and R. W. Webb, for publication in the journal of Agricultural Research, was read December 15.

Page proof of article entitled "Varietal Resistance in Winter Wheat to the Rosette Disease," by R. W. Webb, C. E. Leighty, G. H. Dungan, and J. B. Kendrick, was read December 12.

The article entitled "The Toxicity of Copper Sulfate to the Spores of Tilletia tritici (Bjerk.) Winter," by Fred N. Briggs, was published in University of California Publications in Agricultural Sciences v. 4, no. 13, p. 407-412, 1 figure in text. November 20, 1923. The results reported in this paper are based on investigations conducted in cooperation with the Office of Cereal Investigations.

An article entitled "Marketing the Flax-Wheat Crop," by A. C. Dillman, appears in The Dakota Farmer, v. 43, no. 23, p. 1008. December 1, 1923.

Department Bulletin 1192, entitled "Improvement of Kubanka Durum Wheat by Pure-Line Selection," by Ralph W. Smith, L. R. Waldron, and J. Allen Clark, was received from the Government Printing Office December 8. The results discussed in this bulletin are based on investigations conducted in cooperation with the North Dakota Agricultural Experiment Station.

The paper entitled "Acidity of Corn and its Relation to Vegetative Vigor," by Annie May Hurd appeared in the Journal of Agricultural Research 25: 457-469. September 15, 1923. Received December 10, 1923.

FIELD STATION CONDITION AND PROGRESS

HUMID ATLANTIC COAST STATES (South to North)

GEORGIA

State College of Agriculture, Athens (R. R. Childs) (No report)

VIRGINIA

Arlington Experiment Farm, Rosslyn (J. W. Taylor) (No report)

NEW YORK

Cornell University Agricultural Experiment Station, Ithaca (H. H. Love) (December 3) The weather in November was rather favorable to fall seeding and wheat is looking very well. The good weather also has been favorable for completing all the field work and getting everything in readiness for the spring sowing.

The seed rooms in the new plant-breeding field house are being equipped with mouse-proof cages and steps also are being taken to heat these rooms so that considerable of the winter work may be done there.

Most of the sowing has been completed in the greenhouse including varieties for crossing and some hybrids, together with material which Mr. Dorsey is to use for cytological work. Several graduate students also are conducting research work with small grains and their seedings are being made.

We are now busy taking weights on the oats and barley and the yields are being calculated as rapidly as the weights can be made.

A. F. Barney and F. D. Keim, who have been here some time taking work leading to the degree of Doctor of Philosophy, majoring in plant breeding with problems in cereal investigations, will take their examinations this month. Mr. Barney has been conducting a piece of research on the inheritance of smut resistance in oats, and Mr. Keim has been working on the inheritance of size of plant and spelt characters in a spelt-club cross.

Miss M. E. Jackson has been appointed stenographer from December 1, 1923, to June 30, 1924, as additional clerical aid in connection with the cereal work.

HUMID MISSISSIPPI VALLEY STATES (South to North)

LOUISIANA

Rice Experiment Station, Crowley (J. Mitchell Jenkins) (November 23) With the exception of one rainy day the weather was fine during the period of rice harvest. There probably is not an unthreshed field in southwestern Louisiana.

The soybean harvest is now in progress. The yield will not be so large as that of last year, but the beans are of good quality. The soybeans planted late are well fruited. Mr. Landry, the rice specialist in extension work is

much encouraged by the steadily growing interest in the cultivation of soybeans. The indications are that all available seed of the Biloxi soybean will be planted next spring.

The Louisiana State University had an attractive exhibit at the State Fair held at Shreveport during the week of October 15. The exhibit of the dairy division of the U. S. Department of Agriculture was exceedingly interesting to those engaged in dairying. There was much interest in the soybean and rice exhibits. The latter are to be taken to the Jennings (La.) fair next week.

The general rice exhibit at Shreveport was finer than that of last year. There were nearly 300 entries, mostly from Acadia and Jefferson Davis parishes.

So far this fall the weather has been rather cool. The minimum temperature on October 23 was 36 degrees and since that date it has been down to 33 degrees; in some localities it reached the freezing point. There have been six or eight heavy frosts so far this fall.

(November 28)

Rice threshing was completed on the 23rd. The weather was excellent during the whole threshing period, enabling us to save all rice in excellent condition. All farmers report heavier yields of Fortuna rice than of any other variety. The yield of Acadia was higher than that of Waterbure.

All of the soybean seed was saved in excellent condition. In many places of the field the yield will be smaller because of extra late seeding. The plants were well fruited, however, and the seed is of good quality. In addition to harvesting our own crop, we used our machine in harvesting beans for five other growers.

There is much demand for Fortuna seed, but it is difficult to get good seed free of red rice.

The fair at Jennings was quite a success. The rice exhibit attracted much attention and was the means of interesting many farmers in that vicinity in the experiments at Crowley.

Agricultural Experiment Station, Baton Rouge (H. Stoneberg) (No report)

MISSOURI

Agricultural Experiment Station, Columbia (L. J. Stadler) (November 28)
The yields of 50 stocks of Fulcaster wheat from different sources, grown in our nursery plats during the past season, varied from 9.0 to 26.4 bushels per acre. All of these were pure and true to type. The probable error of these yields, as determined from the Fulcaster check plats, was 0.96 bushels per acre. Similarly, the yields of 15 Poole stocks varied from 14.6 to 23.1 bushels with a probable error of ± 0.59 bushels, and the yields of 15 Red May stocks from 13.0 to 22.6 bushels, with a probable error of 0.73 bushels. Fifty-eight Kherson oat stocks varied in yield from 34.4 to 55.5 bushels per acre with a probable error of ± 1.46 bushels.

This is for the fifth year of our experiment on economic variation within wheat and oat varieties. The experiments have included Red Rustproof and Kherson (Sixty-day) oats, and Fulcaster, Poole, and Red May wheat. The stocks were obtained from various sources, including the Office of Cereal Investigations, State experiment stations, seedsmen, and Missouri farmers. Those not meeting the standard taxonomic descriptions were eliminated. The variation in yield in these experiments is shown in the following table:

<u>Name and Variety</u>	<u>Season</u>	<u>No. of Stocks</u>	<u>Yield (Bu. per Acre)</u>			<u>Probable Errors of Yields</u>
			<u>Lowest</u>	<u>Highest</u>	<u>Range</u>	
<u>Oats</u>						
Red Rustproof	1919	12	59.0	71.9	12.9	1.39
Red Rustproof	1920	8	25.9	36.0	10.1	1.54
Red Rustproof	1921	30	13.9	29.4	15.5	1.42
Kherson	1920	12	28.9	51.7	22.8	1.54
Kherson	1921	31	25.3	43.7	18.4	1.42
Kherson	1922	50	19.3	29.7	9.9	1.01
Kherson	1923	58	34.4	55.5	21.1	1.46
<u>Wheat</u>						
Fulcaster	1922	47	17.8	32.0	14.2	1.28
Fulcaster	1923	50	9.0	26.4	17.4	0.96
Poole	1922	15	20.1	29.7	9.6	1.07
Poole	1923	15	14.6	23.1	8.5	0.59
Red May	1922	14	21.8	31.1	9.3	1.07
Red May	1923	15	13.0	22.6	9.6	0.73

, In each of the 13 experiments a variation in yield, ranging from about 20 per cent to well over 100 per cent, is shown. In each case the differences in yield are clearly significant when compared with the probable error of the experiment and are larger than seems consistent with the use of the variety as an agronomic unit. The stocks of Fulcaster, Poole, and Red May were grown on adjoining plats, and the variation within the variety was far greater than the variation between the varieties. The results of a variety test including these three varieties would be dependent entirely upon the stock which happened to represent each variety in the test. The fact that our Station stock of Fulcaster is the highest yielder of the 50 stocks tested may account in part for the fact that Fulcaster has been the highest yielding variety of wheat in the varietal experiments conducted by this Station. If the Station had chanced to secure another stock of Fulcaster at the beginning of its varietal work, we might not now be recommending this variety to farmers, and, what is perhaps more important, we might now be excluding Fulcaster from our plant improvement work.

These results appear to have an important bearing on the problems of varietal standardization and experimentation. They indicate (1) that the conclusions drawn from a varietal yield test can be safely applied only to the stocks tested and not to the variety as a whole; (2) that the use of the

varietal test as a preliminary to plant improvement may result in many valuable stocks being overlooked; and (3) that continuous "strain tests" of as many different stocks as possible, regardless of their varietal classification, may have an important place in the plant improvement project, as a source of raw material.

TENNESSEE

Agricultural Experiment Station, Knoxville (L. S. Mayer) (No report)

IOWA

Agricultural Experiment Station, Ames (M. T. Jenkins) (No report)

Agricultural Experiment Station, Ames (Investigation of Crown Rust of Oats, S. M. Dietz) (No report)

Iowa State College, Ames (Barberry Eradication, J. H. Muncie) (No report)

ILLINOIS

Funk Bros. Seed Company, Bloomington (Corn Root and Stalk Rot Investigations, J. R. Holbert) (December 8) Harvesting operations are finished for this year and the corn has been graded and shelled. Data are being compiled and tabulated from the past season's experiments.

I send herewith data showing influence on field stand and acre yield of Yellow Dent corn from an early, intermediate, and late date of planting of good seed, Diplodia-infected seed, and seed badly infected with scutellum rot. These experiments were conducted on brown silt loam soil near Oneida, Ill., in 1923.

Date of planting	Character of Seed	Number of replications	Field stand (per cent)	Yield (Bu. per acre)	
				Total	Sound
May 4	Good	9	75.3±1.7	66.1±1.6	57.5±1.4
	Scutellum-rotted	6	47.5±1.9	52.2±2.1	43.3±2.2
	Diplodia-infected	6	22.1±1.5	26.6±1.5	22.7±1.5
May 14	Good	9	89.3±1.2	71.9±1.7	59.2±1.9
	Scutellum-rotted	6	72.1±1.5	59.5±1.0	42.0±0.9
	Diplodia-infected	6	34.3±1.7	38.6±1.4	32.5±1.3
June 2	Good	9	95.9±0.8	68.6±1.6	55.9±2.4
	Scutellum-rotted	6	89.3±1.1	57.3±1.6	35.2±2.4
	Diplodia-infected	6	76.8±1.7	56.3±1.6	45.7±2.4

Post Office Building, Urbana (Barberry Eradication, G. C. Curran) (No report)

INDIANA

Purdue University Agricultural Experiment Station, Lafayette (Corn Root, Stalk, and Ear Rots, G. N. Hoffer) (No report)

Purdue University Agricultural Experiment Station, Lafayette (Leaf Rust Investigations, H. S. Jackson and E. B. Mains) (No report)

College of Agriculture, Purdue University, Lafayette (Barberry Fradication, K. E. Beeson) (No report)

OHIO

College of Agriculture, Ohio State University, Columbus (Barberry Eradication, J. W. Baringer) (No report)

MICHIGAN

Agricultural College, East Lansing (Barberry Fradication, W. F. Reddy) (No report)

WISCONSIN

Agricultural Experiment Station, Madison (Wheat Scab Investigations, J. G. Dickson) (No report)

Agricultural Experiment Station, Madison (Wheat Rosette and Take-All Investigations, H. H. McKinney) (No report)

Department of Agriculture, State Capitol Annex, Madison (Barberry Eradication, W. A. Walker) (No report)

MINNESOTA

Agricultural Experiment Station, University Farm, St. Paul (Wheat Preeding Investigations, O. S. Aamodt) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Stem Rust Investigations, E. C. Stakman) (No report)

Agricultural Experiment Station, University Farm, St. Paul (Barberry Eradication, L. W. Melander) (No report)

GREAT PLAINS AREA (South to North)

OKLAHOMA

Woodward Field Station, Woodward (J. B. Sieglinger) (December 3) In general the weather of the last half of November was cool and relatively dry. Frosts and dews have interfered with threshing to a certain extent. Flat material stored in two barns was threshed during the last part of November and the results are given below. The remaining sorghams will be threshed as soon as conditions permit.

Varietal Experiments, Sown June 5, 1923.

Variety	C.I.No.	Yields (Acre)			Bushel Weight Lbs.
		Total Crop field cured Lbs.	Grain Lbs.	Grain Bu.	
Early White milo,	480	1969	754	13.0	54.0
Smith's Milo x Kafir,		2531	1103	19.0	56
Feterita	182	2756	956	16.5	52
Spur feterita	623	2583	844	14.6	52
Dwarf feterita		2644	934	16.1	53
Blkhl. kaoliang	310	2813	889	15.3	52
Freed sorgo	350	1856	461	8.0	54
Blkhl. kafir	71	4500	720	12.0	57
" " (local sel.)		3375	675	11.3	57
Reed kafir	628	3021	1131	18.9	58
Dawn kafir	340	2700	529	8.8	57
Sunrise kafir, dwf.	472-D	2081	484	8.1	56
Sunrise kafir, 1	472	4163	608	10.1	57
" " 2	472	3938	450	7.5	56
" " 3	472	3994	473	7.9	56
" " (6 in.)	472	3150	604	10.1	57
White kafir	370	2025	360	6.0	58
Pink kafir	432	1969	821	13.7	59

Date-of-Seeding Experiments, 1923.

Dwarf Milo, C.I.No. 332

Date Seeded	Yields (Acre)			Bushel Weight Lbs.
	Total Crop field cured Lbs.	Grain Lbs.	Grain Bu.	
April 14	1125	345	6.0	57.5
May 1	975	315	5.4	57.
" 16	3325	930	16.0	58
June 1	5025	1020	17.6	56
" 15	5325	1050	18.1	53
" 30	Not threshed yet, too green.			

Date-of-Seeding Experiments, 1921 (Cont'd)Feterita, C.I. No. 182.

<u>Date Seeded</u>	<u>Yields (Acre)</u>			<u>Bushel</u>
	<u>Total Crop</u> <u>field cured</u> <u>Lbs.</u>	<u>Grain</u> <u>Lbs.</u>	<u>Grain</u> <u>Bu.</u>	<u>Weight</u> <u>Lbs.</u>
May 1	906	558	5.8	54.0
" 16	2309	900	15.8	55
June 1	2025	870	15	54
" 15	3375	1050	18.1	55
" 30	Not threshed, too green.			
July 15	" " " "			

Dwarf feterita

May 1	No stand, about 8 plants in plat.			
May 16	1909	828	15.1	54.0
June 1	2475	825	14.2	54.5
June 16	4350	1170	20.2	51.5
June 30	Not threshed, too green.			
July 15	" " " "			

Sunrise kafir

April 14	1993	476	7.9	58.0
May 1	1181	236	3.9	58
May 16	2363	540	9.0	57
June 1	4125	750	12.5	59
June 15	Not threshed, too green.			
June 30	" " " "			

Reed kafir

May 1	1013	248	4.1	56.0
May 16	2764	849	14.1	57
June 1	5760	1472	23.7	58
June 16	4770	1548	25.8	50

Rate-of-Seeding Experiments, Sown May 19 in 44-inch rows.

<u>Distance between</u> <u>plants</u>	<u>Yields (Acre)</u>			<u>Bushel</u>
	<u>Total Crop</u> <u>field cured</u> <u>Lbs.</u>	<u>Grain</u> <u>Lbs.</u>	<u>Grain</u> <u>Bu.</u>	<u>Weight</u> <u>Lbs.</u>
<u>Sunrise kafir</u>				
6 inches	4000	300	15.3	57.0
12 "	3357	771	12.9	58
18 "	3986	561	14.4	58
24 "	3807	397	14.8	58
30 "	5014	1106	18.4	53
<u>Reed kafir, C.I. No. 628</u>				
6 inches	4520	1386	23.1	55.0
12 "	3729	1389	25.1	56
18 "	2957	1119	18.5	58.5
24 "	2764	550	15.8	55.5
30 "	2250	850	13.9	58.5

Maximum temperature for last half of November, 72° on the 17th; minimum, 29° on the 28th and 29th. Precipitation, 0.24 inch (partly snow) on the 27th.

KANSAS

Agricultural Experiment Station, Manhattan (J. H. Parker) (No report)

Hays Branch Experiment Station, Hays (A. F. Swanson) (No report)

COLORADO

Akron Field Station, Akron (F. A. Coffman) (No report)

Agricultural College, Fort Collins (Barberry Eradication, E. A. Lungren) (No report)

NEBRASKA

College of Agriculture, University Farm, Lincoln (Barberry Eradication, A. F. Thiel) (No report)

WYOMING

College of Agriculture, University of Wyoming, Laramie (Barberry Eradication, R. U. Cotter) (No report)

SOUTH DAKOTA

College of Agriculture, Brookings (Barberry Eradication, L. D. Hutton) (No report)

NORTH DAKOTA

Agricultural Experiment Station, Agricultural College (W. E. Brentzel) (No report)

Agricultural Experiment Station, Agricultural College (Barberry Eradication, G. C. Mayoue) (No report)

Dickinson Substation, Dickinson (R. W. Smith) (November 30) The mild weather has continued to the end of the month, making one of the mildest Novembers ever known at Dickinson. There has been no snow on the ground all month and the ground remained unfrozen during much of the time. There has been only about 0.3 inch of rainfall this month.

Winter grain apparently is in fairly good condition, being greatly benefited by abundant rains in September and early October.

Most of the tables for the annual cereal report have been prepared.

Northern Great Plains Field Station, Mandan (J. C. Brinsmade, Jr.) (No report)

MONTANA

Judith Basin Substation, Moccasin (R. W. May) (November 30) The weather in November has been very mild although too cold for fall wheat to make much growth. Most of the fall wheat in this section of the State will enter the winter in good condition. Wheat sown on good summer fallow has not suffered either from lack of moisture or soil blowing as it did a year ago.

We are having a snow storm today, accompanied by a high wind. It is probable that today's storm is the forerunner of winter weather.

Mr. A. Osenbrug, superintendent of the substation, and his family have been visiting in Bozeman, Helena, and Butte, Mont., for the past two weeks.

State College of Agriculture, Bozeman (Barberry Eradication, W. N. Christopher) (No report)

WESTERN BASIN AND COAST AREAS (North to West and South)

IDAHO

Aberdeen Substation, Aberdeen (G. A. Wiebe) (No report)

Agricultural Experiment Station, Moscow (Stripe Rust Investigations, C. W. Hungerford) (No report)

OREGON

Sherman County Branch Station, Moro (D. E. Stephens) (No report)

CALIFORNIA

Biggs Rice Field Station, Biggs (J. W. Jones) (December 12) We have had a very dry fall in the Sacramento Valley. According to reports, part of the wheat sown early germinated and died. Barley growers are waiting for rain to moisten the soil before plowing and seeding. Pasture growth is very short for this time of the year. Some rice growers have taken advantage of the dry fall and have done considerable fall plowing. We have plowed part of our land at the Station. The rice market is fairly steady at \$2.65 to \$2.80 per hundred for rough rice.

University Farm, Davis (V. H. Florell) (November 24) Seeding of the entire set of cereal experiments was completed yesterday, and Dr. H. H. Love's block, a little over 1100 rows, arrived yesterday evening and has been sown today. There remains only a small lot of F-1, rye-wheat hybrids to be worked over. As there is almost complete sterility in this group there probably will be little to sow. There has been very little rain thus far this fall in California. The month of November has been very dry and the grains were sown in a dry seed bed. All that we now need is the fall rains.

(December 1)

The wheat-rye hybrids (F-1) have been threshed and the seed for continuing the experiment has been sown. The sterility of this material was very high, as was expected. Seventy-eight plants, with a total of 1,326 spikes, were produced. From these plants 244 more or less well-developed kernels were obtained. The percentage of fertility was approximately 0.300 of one per cent.

A light rain fell on Thanksgiving evening. Today a strong north wind is blowing which is rapidly drying up the soil moisture. More rain will be needed in a few days.

Prof. D. N. Borodin, American representative of the Russian Bureau of Applied Botany, New York City, N. Y., visited the Farm early in November.

Agricultural Experiment Station, Berkeley (F. N. Briggs) (No report)

CEREAL COURIER

Official Messenger of the Office of Cereal Investigations
Bureau of Plant Industry, U. S. Dept. of Agriculture.
(NOT FOR PUBLICATION)

Vol. 15

December 31, 1923

No. 32

Personnel (Dec. 19-31) and project Issue.

PERSONNEL ITEMS

Dr. Carleton E. Ball, cerealist in charge, is in attendance at the joint meetings of the American Society of Agronomy and Section O, Agriculture, of the American Association for the Advancement of Science, in Cincinnati, Ohio. At the request of the secretaries of the two organizations, Doctor Ball organized a symposium on "Research Fundamental to Solving Economic Problems on Crop Plants," which includes the following discussions:

1a	Taxonomy -	Dr. Carleton E. Ball
1b	Phycozoology -	Dr. Cornelius L. Snow
2	Morphology -	Dr. Russell A. Oakley
3	Physiology -	Dr. William Crocker
4	Cytology -	Dr. Robert A. Harper
5	Genetics -	Dr. Harry E. Love
6	Biochemistry	Dr. Ross A. Gortner
7	Edaphics (Soils) -	Dr. Jacob G. Lipman

Dr. E. Brantzel, assistant pathologist in the investigation of diseases of flax, conducted in cooperation with the North Dakota Agricultural Experiment Station, left Fargo, N. Dak., December 20 to confer with experiment station officials at St. Paul, Minn. During the week of December 27 he will attend the meetings of the American Association for the Advancement of Science and affiliated societies in Cincinnati, where he will present a paper on the progress of the investigations of the pasmo disease of flax. He will then report in Washington, D. C., for conferences with the cerealist and other members of the Office staff.

Dr. Harry V. Marlan, who has been in Abyssinia since the latter part of October, writes from Addis Ababa, the capital, that he expects to be at Khartoum between January 25 and February 12, where mail addresses in care of G. W. Grabham, Box 178, will reach him.

Dr. A. G. Johnson, pathologist in charge of the investigations of diseases caused by imperfect and sac fungi, is in attendance at the meetings of the American Association for the Advancement of Science and affiliated societies in Cincinnati.

C. H. Kyle, agronomist in corn investigations, returned December 21 from Baton Rouge, La., where he obtained data on the past season's experiments with corn conducted in cooperation with the Louisiana Agricultural Experiment Station and arranged for a continuation of the experiments in 1924. On the return trip he conferred with officials of the Texas Agricultural Experiment Station, at College Station, concerning possible cooperative corn investigations.

Karl P. Link, field assistant in cereal disease investigations conducted in cooperation with the Wisconsin Agricultural Experiment Station at Madison, Wis., completed his duties December 31, on which date his appointment was terminated.

Dr. H. H. Love, of the department of plant breeding at the New York State College of Agriculture, and collaborator with this Office, is in attendance at the meetings of the American Association for the Advancement of Science and affiliated societies held in Cincinnati, Ohio, from December 27 to January 1.

H. H. McKinney, pathologist in the cooperative cereal disease investigations conducted at Madison, Wis., on December 29 presented a paper entitled "An Undescribed Imperfect Fungus Associated with Wheat Foot Rot in Oklahoma," before the 15th annual meeting of the American Phytopathological Society, one of the affiliated societies of the American Association for the Advancement of Science in session at Cincinnati, Ohio, from December 27 to January 1. Mr. McKinney will come to Washington at the close of these meetings to confer with officials of this Office and to make special investigations of wheat plants growing at Arlington Experiment Farm infected with rosette disease.

In addition to his studies in Washington he will spend a considerable portion of the next three months at Johns Hopkins University, Baltimore, in special research in connection with the rosette disease of wheat and virus and protozoan diseases.

Dr. L. E. Randolph, botanist at the New York State College of Agriculture, Ithaca, N. Y., and agent of this Office in cytological studies of corn, is in attendance at the meetings of the American Association for the Advancement of Science and affiliated societies in Cincinnati. On his return he will stop in Washington for a few days to confer with the cerealist in charge and others regarding the progress of corn experiments and investigations.

Frederick D. Riney, agronomist in charge of corn investigations, left Washington December 26 to attend the meetings of the American Association for the Advancement of Science and the American Society of Agronomy held in Cincinnati from December 27 to January 1.

Arthur E. Sanger, assistant agronomist in charge of cereal investigations at the Hays Branch Experiment Station, Hays, Kans., left Hays about the middle of December to confer with officials of the Kansas Agricultural Experiment Station at Manhattan. During the week of December 21 he will attend the meetings of the American Association for the Advancement of Science and affiliated societies at Cincinnati, Ohio. From there he will proceed to Washington, D. C., to prepare a report on the comparative experiments conducted at Hays, Kans., during the past year.

The appointment of Ralph M. Williams, field assistant, in the flax investigations at Mandan, N. Dak., was terminated December 31.

VISITORS

James A. Faris, former State leader of barberry eradication in Nebraska, now associated with Dr. G. M. Reed in research on the physiology of smut infection conducted at the Brooklyn Botanic Garden, visited the Office December 20.

TO ALL MEMBERS OF THE STAFF

This has been a year of great progress and achievement. Our output of published results has been large and the quality high. Our cooperative relations have been broadened and strengthened.

Working conditions have not been satisfactory at all times and in all places. You have accepted them with cheerful patience and carried on.

Financial support for the work and personal remuneration for the worker have not always been the fullest that has been deserved. You have given a full measure of energy and devotion to your tasks.

The standards of public service are rising steadily, both as to preparation and productiveness. You have striven splendidly to meet the increasing requirements.

You may well be heartened by the thought that your labors are helpful to our employers, the American people. Let this knowledge quicken us to greater effort.

The coming year doubtless has good things in store in the way of greater problems to solve and more complex phenomena to interpret. Let us rejoice and be glad.

Much hearty appreciation of your loyalty and industry, and with best wishes for 1924, I am,

Very sincerely,

C. P. Ball,
Cerealist in Charge.

December 25, 1923.

OUTLINE OF SCOPE OF INVESTIGATIONS
OF
OFFICE OF CEREAL INVESTIGATIONS

This office is charged with the investigation of the production and improvement of cereal crops and the investigation and control of disease affecting them.

Cereal crops include wheat and wheat allies (eawer, spelt, and einkorn), rye, oats, barley, rice, corn, grain sorghums and broomcorn, proso millet, seed flax, and buckwheat.

Agronomic investigation of cereals, chiefly cooperative, to identify, compare, and improve varieties and strains; to determine best methods and sequences for growing them; and to discover the fundamental causes for observed responses to environing conditions.

(1) Identification, description, and classification of domestic and introduced varieties and strains.

(2) Varietal comparisons to determine actual and relative productiveness and adaptation under the different sets of environing conditions obtaining throughout the United States.

(3) Breeding by pure-line selection, or by hybridization and subsequent segregation and selection, for all characters and qualities desired, as earliness, strength of straw, seed retention, seed color, protein content, resistance to drought, cold, disease, insects, etc.

(4) Genetic studies including cytologic research on the laws of inheritance of characters and qualities fundamental to breeding progress.

(5) Milling and baking and macaroni-making experiments to determine commercial value of newly developed or introduced wheats.

(6) Morphologic and cytologic studies to discover differences in structure which may be fundamental causes of resistance, adaptation, and productiveness.

(7) Physiologic research on how plants function, to discover reasons for observed behavior under different conditions of environment.

(8) Rates of seeding to determine the influence of stand on production of tillers, ratio of grain to straw, control of weeds, and profitable use of soil moisture and fertility.

(9) Dates of seeding to determine effect on winter or spring survival, weed control, time of maturity, and resistance to, or evasion of, infection by fungi and bacteria and infestation by insects.

(10) Methods of soil tillage and seedbed preparation to determine effect on soil structure, moisture and fertility, weed control, plant growth, and productiveness.

(11) Crop rotations to determine influence of one crop on another, and on soil moisture and fertility, weed growth, etc.

Pathologic investigation, chiefly cooperative, of the nature, symptoms, distribution, cause and control of cereal diseases:-

(1) Plant studies to determine the symptoms presented by the host plant at different stages of its growth and at different stages of development of the disease.

(2) Surveys to determine geographic distribution and economic importance of diseases, and of wild hosts and alternate hosts.

(3) Cultural studies to discover and identify the causal organism or organisms.

(4) Inoculation and re-isolation studies to prove their disease-producing power.

(5) Life-history studies to determine how and where the organism lives throughout the year and how it infects the host plant.

(6) Control studies to determine methods of controlling or eradicating diseases by soil treatment, seed treatment, seedling treatment, plant treatment, eradication of alternate hosts, or plant resistance.

(7) Breeding operations to obtain resistant strains if other methods of control are not practicable.

(8) Fundamental research in morphology, cytology, physiology, and chemistry to discover causes of resistance.

TO CEREAL INVESTIGATIONS STAFF

Any suggestions as to the accuracy and completeness of the above outline of the scope of our investigations will be greatly appreciated.

C. R. Ball,

Cerealist in Charge.

PROJECT REPORTSFLAX INVESTIGATIONS.

(A. C. Dillman, Agronomist in Charge)

In cooperation with the Office of Western Irrigation Agriculture, the Office of Cereal Investigations is conducting experiments in growing flax without irrigation at the San Antonio Experiment Farm, San Antonio, Texas. Mr. George T. Ratliffe, Superintendent of the San Antonio Experiment Farm, in reporting yields for the season of 1922-23, writes: "In the date-of-seeding test the plot seeded December 21, 1922, gave the highest yield. The November 11 seeding was at a disadvantage in that older seed was used and a much poorer stand was obtained. With equal stands it seems probable that the planting made in November would have equalled, or exceeded, other plantings.

In the variety test Reserve, C. I. No. 19, gave the best results both as to cold resistance and yield. Damont, C. I. No. 3, which was used as a check in both the variety and nursery plantings, ranks low in all tests."

The yields reported were as follows:

Date-of-Seeding Test. (Damont C. I. No. 3)

<u>Date Seeded</u>	<u>Date harvested (1923)</u>	<u>Spring survival (per cent)</u>	<u>Yield per acre (bushels)</u>	<u>Weight per bushel (pounds)</u>
Nov. 11, 1922	May 23	82	10.1	54.5
Dec. 21, 1922	" "	92	11.4	54.5
Jan. 20, 1923	" "	98	9.8	54.0
March 10, 1923	June 4	----	7.3	55.0

Varietal Test ¹

<u>C. I. No.</u>	<u>Variety</u>	<u>Spring survival (per cent)</u>	<u>Yield per acre (bushels)</u>	<u>Weight per bushel (pounds)</u>
19	Reserve	98	13.9	55.5
12	Primost	93	13.5	55.0
13	N. D. R. No. 114	96	11.8	55.0
3	Damont	81	10.0	54.5
8	N. D. R. No. 52	93	9.6	55.0

¹ Duplicate plats seeded Nov. 23, 1922, harvested May 23, 1923.

Flax Nursery ¹					
C. I. No.	Variety	Yields per acre (bushels)	C. I. No.	Variety	Yields per acre (bushels)
3	Damont (guard)	25.6	182	Cantania	21.5
3	Damont (check)	18.4	44	La Plata	24.2
19	Reserve	19.6	107	Morteras	29.2
187	Sel. C. I. 19-8	25.3	3	Damont (check)	9.1
12	Primost	9.1	109	Rosquin	31.2
27	Nova Rossisk	19.0	25	Williston Golden	21.5
149	Sel. C. I. 27-5	16.4	263	Sel. Smyrna ²	4.8
261	Sel. C. I. 27-13	19.6	262	Sel. Matania ²	5.1
3	Damont (check)	11.9	265	Sel. C.I. 34-32	17.1
260	Sel. C. I. 4-1	26.7	267	Sel. C.I. 34-34	26.2
179	Winona	15.1	3	Damont (check)	15.6
180	Chippewa	12.3	3	Damont (guard)	26.1

¹ Yields are average of triplicate rows, each 34 ft. 8 in. long, 1 foot apart. Seeded Nov. 21, 1922.

² Lodged badly, which probably accounts for low yield.

PUBLICATIONS IN 1923

The following 66 papers, resulting from the work of the Office of Cereal Investigations, were published during the calendar year 1923, in the various series of Departmental publications, in publications of the cooperating State agricultural experiment stations, and in private journals.

AGRONOMIC SUBJECTS

Corn

Influence of Spacing on Productivity in Single-Ear and Prolific Types of Corn, by E. B. Brown and H. S. Garrison. U. S. Dept. Agr. Bul. 1157, 10 p., 6 fig. May 21, 1923.

Acidity of Corn and its Relation to Vegetative Vigor, by Annie May Hurd. In Jour. Agr. Research, v. 25, no. 11, p. 457-469, 2 fig. Sept. 15, 1923.

A New Method of Self-Pollinating Corn, by Merle T. Jenkins. In Jour. Hered., v. 14, no. 1, p. 41-44, fig. 17-18. April, 1923. (In cooperation with the Iowa Agricultural Experiment Station).

Wheat

The Inheritance of Growth Habit and Resistance to Stem Rust in a Cross between Two Varieties of Common Wheat, by Olaf S. Aamodt. In Jour. Agr. Research, v. 24, no. 6, p. 457-469, pl. 1-2, 1 fig. May 12, 1923. (In cooperation with Minnesota Agricultural Experiment Station).

The Wheat Situation in the Northern Great Plains Area, by Carleton R. Ball. In Proc. 36th Ann. Conven. of the Assn. of Land-Grant Colleges, 1922, p. 35-92, 6 fig. 1923.

The Club Wheats, by J. Allen Clark and John H. Martin. U. S. Dept. Agr., Farmers' Bul. 1303, 17 p. 12 fig. January, 1923.

The Durum Wheats, by J. Allen Clark and John H. Martin. U. S. Dept. Agr., Farmers' Bul. 1304, 15 p., 5 fig. January, 1923.

The Common White Wheats, by J. Allen Clark, John H. Martin and C. E. Leighty. U. S. Dept. Agr., Farmers' Bul. 1301, 42 p., 20 fig. December, 1922 (Received January 26, 1923).

Kota Wheat, by J. A. Clark and L. R. Waldron. U. S. Dept. Agr. Circ. 280, 16 p., 6 fig. August, 1923.

A Study of Rust Resistance in a Cross between Marquis and Kata wheats, by H. E. Hayes and C. S. Amort. In Jour. Agr. Research, v. 24, no. 12, p. 997-1012, 3 pl. June 23, 1923. (In cooperation with Minnesota Agricultural Experiment Station).

The Soft Red Winter Wheats, by Clyde F. Leighty and Joan H. Martin. U. S. Dept. Agr., Farmers' Bul. 1505, 55 p., 49 fig. December, 1922, (Received February 6, 1923).

Polish and Poulard Wheats, by Joan H. Martin. U. S. Dept. Farmers' Bulletin 1340, 9 p., 3 fig. July, 1923.

Improvement of Indiana Durum Wheat by Pure-Line Selection, by Ralph W. Smith, L. R. Baldwin, and J. Allen Clark. U. S. Dept. Agr. Bul. 1192, 14 p., 4 fig. November, 1923.

Experiments in Wheat Production on the Dry Lands of the Western United States, by David E. Stephens, Max A. McCall, and Aaron F. Bracken. U. S. Dept. Agr. Bul. 1173, 60 p., 24 fig. September, 1923. (In cooperation with the Oregon, Washington, and Utah agricultural experiment stations).

Oats

A Multiflorous Variation in Burt Oats, by F. A. Coffman and H. S. Quisenberry. In Jour. Hered., v. 14, no. 4, p. 185-192, fig. 17-21. July, 1923.

Named Oats, by T. R. Stanton. In Jour. Hered., v. 14, no. 4, p. 177-183, fig. 14-16. July, 1923.

Prolific and Other Dwarf Oats, by T. R. Stanton. In Jour. Hered., v. 14, no. 7, p. 301-305, fig. 4-8. October, 1923.

Barley

Water Content of Barley Kernels during Growth and Maturation, by Harry V. Harlan and Merritt N. Pope. In Jour. Agr. Research, v. 23, no. 3, p. 333-350, 15 fig. February 5, 1923. (In cooperation with the Idaho Agricultural Experiment Station).

Many-Necked Dwarf Barley, by Harry V. Harlan and Merritt N. Pope. In Jour. Hered., v. 13, no. 6, p. 269-273, fig. 12-15. June, 1922. (Date of Issue, February 15, 1923).

Rice

Some New Varieties of Rice, by Charles E. Chanceliss and J. Mitchell Jenkins. U. S. Dept. Agr. Bul. 1127, 18 p., 4 pl., 3 fig. January 12, 1923. (In cooperation with the Louisiana Agricultural Experiment Station).

Rice Experiments at the Riggs Rice Field Station in California, by Jenkin W. Jones. U. S. Dept. Agr. Bul. 1188, 60 p., 15 fig. June, 1923. (In cooperation with the Sacramento Valley Grain Association).

Grain Sorghums

Grain Sorghum Experiments at the Woodward Field Station in Oklahoma, by J. B. Sieglinger. U. S. Dept. Agr. Bul. 1175, 65 p., 7 pl., 14 fig. September, 1923.

General or Miscellaneous

Oats, Barley, Rye, Rice, Grain Sorghums, Seed Flax, and Buckwheat, by C. R. Ball, T. R. Stanton, H. V. Harlan, C. E. Leighty, C. E. Chambliss, A. C. Dillman, O. C. Stine, O. E. Baker, O. A. Juve, and W. J. Spillman. U. S. Dept. Agr., Yearbook 1922, p. 469-568, 64 fig., 1 headpiece. 1923.

The Minimum Temperature of Germination of Seeds, by F. A. Coffman. In Jour. Amer. Soc. Agron., v. 15, no. 7, p. 257-270. July 15, 1923. (In cooperation with Kansas Agricultural Experiment Station).

Flax and Wheat; a New Mixed Crop, by A. C. Dillman. In Dakota Farmer, v. 43, no. 5, p. 232-233. March 1, 1923.

Marketing the Flax-Wheat Crop, by A. C. Dillman. In The Dakota Farmer, v. 43, no. 23, p. 1005. December 1, 1923.

Cereal Experiments at Chico, California, by V. H. Florell, U. S. Dept. Agr. Bul. 1172, 33 p., 5 fig. August, 1923.

The Use and Value of Back-Crosses in Small-Grain Breeding, by Harry V. Harlan and Merritt N. Pope. In Jour. Hered., v. 13, no. 7, p. 319-322, 1 chart. July, 1922. Date of Issue of this Number, March 10, 1923.

PATHOLOGIC SUBJECTS

Imperfect and Sac Fungi, etc.

Influence of Soil Temperature and Moisture on the Development of the Seedling-Blight of Wheat and Corn Caused by Gibberella saubinetii, by James G. Dickson. In Jour. Agr. Research, v. 23, no. 11, p. 837-870, 6 pl., 15 fig. March 17, 1923. (In cooperation with the Wisconsin Agricultural Experiment Station).

Some Graminicolous Species of Helminthosporium. I., by Charles Drechsler. In Jour. Agr. Research, v. 24, no. 8, p. 641-739, 33 pl. May 26, 1923.

Early Vigor of Maize Plants and Yield of Grain as Influenced by the Corn Root, Stalk, and Ear Rot Diseases, by James R. Holbert, W. L. Burlison, H. Howard Biggar, Benjamin Koehler, George H. Dungan and Merle T. Jenkins. In Jour. Agr. Research, v. 23, no. 8, p. 583-629, 7 pl., 20 fig. February 24, 1923. (In cooperation with Illinois Agricultural Experiment Station).

Investigations of the Rosette Disease of Wheat and Its Control, by Harold H. McKinney. In Jour. Agr. Research, v. 23, no. 10, p. 771-800, 8 pl., 2 fig. March 10, 1923. (In cooperation with the Wisconsin, Illinois, and Indiana Agricultural Experiment Stations).

Symptoms of Wheat Rosette Compared with Those Produced by Certain Insects, by Harold H. McKinney and Walter H. Larrimer. U. S. Dept. Agr. Bul. 1157, 6 p., 4 pl. March 22, 1923. (Joint contributions from the Bureau of Plant Industry and Entomology, in cooperation with the Illinois, Indiana, and Wisconsin agricultural experiment stations).

Investigations of Heat Cancer of Flax, by C. S. Reddy and A. F. Brentzel. U. S. Dept. Agr. Bul. 1120, 12 p., 5 pl., 4 fig. October 26, 1922 (Received January 12, 1923) (In cooperation with the North Dakota Agricultural Experiment Station).

Rusts

A Cytological Study of Infection of Baart and Kanred Wheats by Puccinia graminis tritici, by Ruth F. Allen. In Jour. Agr. Research, v. 25, no. 5, p. 151-161, 6 pl. January 20, 1923. (In cooperation with the California Agricultural Experiment Station).

Eradication of Common Barberry and Black Stem Rust in Ohio, by John A. Baringer and Wilbur G. Stover. Ohio State Univ. Agr. Col. Exten. Serv. Bul., v. 18, no. 15, 16 p., 6 fig. 1923. (In cooperation with Office of Cereal Investigations).

Common Barberry and Black Stem Rust in Indiana, by L. E. Beeson. Indiana Agr. Exp. Sta. Ext. Bul. 113, 8 p., 7 fig. June, 1923.

The Role of the Genus Rhizinus in the Dissemination of Crown Rust, by S. M. Diets. U. S. Dept. Agr. Bul. 1162, 15 p., 5 fig. September, 1923. (In cooperation with the Iowa Agricultural Experiment Station).

The Mode of Inheritance of Resistance to Puccinia graminis with Relation to Seed Color in Crosses between Varieties of Durum Wheat, by J. B. Harrington and G. S. Ascroft. In Jour. Agr. Research, v. 24, no. 12, p. 979-996, 4 pl. June 25, 1923. (In cooperation with Minnesota Agricultural Experiment Station).

Studies on the Life History of Stripe Rust, Puccinia glumarum (Schm.) Erikss. and Henn., by Charles W. Hungerford. In Jour. Agr. Research, v. 24, no. 7, p. 607-620, 4 pl., 1 fig. May 19, 1923. (In cooperation with Oregon and Idaho agricultural experiment stations).

Specialized Varieties of Puccinia glumarum and Hosts for Variety Tritici, by Charles W. Hungerford and C. E. Owens. In Jour. Agr. Research, v. 25, no. 9, p. 365-401, 6 pl. September 1, 1923. (In cooperation with Idaho and Oregon agricultural experiment stations).

Hydrogen-ion Concentration and Varietal Resistance of Wheat to Stem Rust and Other Diseases, by Annie May Harg. In Jour. Agr. Research, v. 23, no. 3, p. 373-386. February 3, 1923.

A Statistical Study of the Comparative Morphology of Biologic Forms of Puccinia graminis, by M. N. Levine. In Jour. Agr. Research, v. 24, no. 7, p. 539-567, 2 pl. 14 fig. May 19, 1923. (In cooperation with Minnesota Agricultural Experiment Station).

Resistance in Rye to Leaf Rust, Puccinia dispersa Erikss., by E. B. Mains and C. E. Leighty. In Jour. Agr. Research, v. 25, no. 5, p. 243-252, 2 pl. Aug. 4, 1923. (In cooperation with Indiana Agricultural Experiment Station).

Destroy the Common Barberry, by E. C. Stakman, U. S. Dept. Agr. Farmers' Bul. 1058, 14 p., 9 fig. Third revision, February, 1923.

Barberry Eradication Prevents Black Rust in Western Europe, by E. C. Stakman. U. S. Dept. Agr. Circ. 269, 15 p., 3 fig. April 1923.

Spores in the Upper Air, by E. C. Stakman, A. W. Henry, G. C. Curran, and W. N. Christopher. In Jour. Agr. Research, v. 24, no. 7, p. 599-605, 2 pl. May 19, 1923. (In cooperation with Minnesota Agricultural Experiment Station).

Biologic Forms of Puccinia graminis on Varieties of Avena spp., by E. C. Stakman, M. N. Levine, and D. L. Bailey. In Jour. Agr. Research, v. 24, no. 12, p. 1013-1018, 4 pl. June 23, 1923. (In cooperation with Minnesota Agricultural Experiment Station).

Kill the Common Barberry with Chemicals, by Noel F. Thompson. U. S. Dept. Agr. Circ. 268, 4 p., 3 fig. March, 1923.

Fighting Black Stem Rust of Grains by Eradicating the Barberry, by Noel F. Thompson and James G. Dickson. Wisconsin State Dept. Agr. Bul. 56, 28 p., 15 fig. May, 1923. (Wis. Agr. Exp. Sta. Bul. 357). (In cooperation with Office of Cereal Investigations).

Downy Mildews

Production and Dispersal of Conidia in the Philippine Sclerosporas of Maize, by William H. Weston, Jr. In Jour. Agr. Research, v. 23, no. 4, p. 239-278, 10 pl., 2 fig. January 27, 1923.

A Method of Treating Maize Seed to Destroy Adherent Spores of Downy Mildew, by Wm. H. Weston, Jr. In Jour. Agr. Research, v. 24, no. 10, p. 853-860. June 9, 1923.

Smuts

Relation of Certain Soil Factors to the Infection of Oats by Loose Smut, by Lucille K. Bartholomew and Edith Seymour Jones. In Jour. Agr. Research, v. 24, no. 7, p. 569-575, 2 fig. (In cooperation with Wisconsin Agricultural Experiment Station).

The Toxicity of Copper Sulfate to the Spores of Tilletia tritici (Bjerk.) winter, by Fred N. Briggs. In Univ. Calif. Pub. Agr. Sci., v. 4, no. 13, p. 407-412, 1 fig. November 20, 1923. (In cooperation with the Office of Cereal Investigations).

Occurrence of Bunt in Rye, by E. F. Gaines and F. J. Stevenson. In Phytopath., v. 13, no. 5, p. 210-215, 2 fig. May, 1923. (In cooperation with Washington Agricultural Experiment Station).

Influence of Temperature, Moisture, and Oxygen on the Spore Germination of Ustilago avenae, by Edith Seymour Jones. In Jour. Agr. Research, v. 24, no. 7, p. 577-591, 3 fig. May 19, 1923. (In cooperation with Wisconsin Agricultural Experiment Station).

Influence of Temperature on the Spore Germination of Ustilago zeae, by Edith Seymour Jones. In Jour. Agr. Research, v. 24, no. 7, p. 593-597, 1 fig. May 19, 1923. (In cooperation with Wisconsin Agricultural Experiment Station).

Fungicidal Dusts for the Control of Bunt, by William W. Mackie and Fred N. Briggs. Calif. Agr. Exp. Sta. Bul. 364, p. 533-572, 3 pl., 12 fig. May, 1923. (In cooperation with the Office of Cereal Investigations).

An Effective Method of Inoculating Barley with Covered Smut, by W. H. Tisdale. In Phytopath., v. 13, no. 12, p. 551-554. December, 1923.

Flag Smut of Wheat, with Special Reference to Varietal Resistance, by W. H. Tisdale, G. H. Dungan and C. E. Leighty. Ill. Agr. Exp. Sta. Bul. 242, p. 508-533, 3 fig. April, 1923. (In cooperation with the Office of Cereal Investigations).

Flag Smut of Wheat, by W. H. Tisdale, G. H. Dungan and C. E. Leighty, U. S. Dept. Agr. Circ. 273, 5 p., 2 pl. June, 1923. (In cooperation with the Illinois Agricultural Experiment Station and the Illinois State Department of Agriculture).

Experiments with Hot Water, Formaldehyde, Copper Carbohydate, and Chlorophol for the Control of Barley Smuts, by W. H. Tisdale, J. W. Taylor and Marion A. Griffiths. In Phytopath., v. 13, no. 4, p. 153-150. April, 1923.

Bacteriological Diseases

A Bacterial Disease of Brome-Grass, Charles S. Reddy and James Godkin. In Phytopath., v. 13, no. 2, p. 74-86, 2 pl. February, 1923.

PHYSIOLOGICAL AND CHEMICAL SUBJECTS.

Accumulation of Aluminum and Iron Compounds in Corn Plants and Its Probable Relation to Rootrots, by G. N. Hoffer and R. H. Carr. In Jour. Agr. Research, v. 23, no. 10, p. 801-823, 21 pl. March 10, 1923. (In cooperation with the Indiana Agricultural Experiment Station).

The Accumulation of Iron and Aluminium Compounds in the Corn Plant and its Probable Relation to Root Rots. II, by G. N. Hoffer and J. F. Trost. In Jour. Amer. Soc. Agron., v. 15, no. 8, p. 323-331. August, 1923. (In cooperation with the Indiana Agricultural Experiment Station).

Effects of the Method of Desiccation on the Carbohydrates of Plant Tissue, by Karl P. Link and W. E. Tottingham. In Jour. Amer. Chem. Soc. v. 45, p. 439-447. February, 1923. (In cooperation with the Wisconsin Agricultural Experiment Station).

MANUSCRIPTS IN PRESS, DECEMBER 31, 1923

On December 31, 1923, the following 41 manuscripts, resulting from the work of the Office of Cereal Investigations, were in press, scheduled to appear in the various series of Departmental publications, in publications of cooperating State agricultural experiment stations, and in private journals. In addition nine articles on cereal subjects submitted by members of the staff of the Office of Cereal Investigations during 1922, are awaiting publication in the Agricultural Cyclopedia for Young People.

AGRONOMIC SUBJECTS

Corn

Anchorage and Extent of Corn Root Systems, by James R. Holbert and Benjamin Koehler. Submitted August 24, 1923, for publication in the Journal of Agricultural Research.

Effects of Selection on the Yield of a Cross between Varieties of Corn by F. D. Richey. Submitted July 6, 1922, for publication as a Department Bulletin.

Defective Seeds in Maize: An Old Character, by Frederick D. Richey, Approved August 23, 1923, for publication in the Journal of Heredity.

Wheat

Varietal Experiments with Hard Red Winter Wheats in Dry Areas of the Western United States, by J. Allen Clark. Submitted November 8, 1923, for publication as a Department Bulletin.

Comparative Value of Hots and Marquis wheats for Milling and Bread-making, by J. Allen Clark and J. H. Shollenberger. Approved December 1, 1923, for publication in The Northwestern Miller.

The Blooming of Wheat Flowers, by C. E. Leighty and W. J. Sando. Submitted December 1, 1923, for publication in the Journal of Agricultural Research.

Electrochemical Treatment of Seed Wheat, by C. E. Leighty and J. W. Taylor. Submitted March 31, 1923, for publication as Department Circular.

Experiments with Emmer, Spelt, and Einkorn, by J. H. Martin and C. E. Leighty. U. S. Dept. Agr. Bul. 1197. Submitted March 7, 1923; galley proof read November 27.

Milling and Baking Experiments with American Wheat Varieties, by J. H. Snollenberger and J. Allen Clark. U. S. Dept. Agr. Bul. 1183. Submitted May 14, 1923, by Bureau of Agricultural Economics; galley proof read, October 2; page proof, November 24.

Effects of the Modified Hot-Water Treatment on Germination, Growth, and Yield of Wheat, by V. F. Tapke. Submitted December 15, 1923, for publication in the Journal of Agricultural Research.

Oats

Spring Oat Production, by C. W. Warburton. Revision of Farmers' Bulletin 892. Submitted February 2, 1923; page proof read June 14.

Rice

How to Grow Rice in California, by J. W. Jones. Submitted December 2, 1922, for publication as a Farmers' Bulletin.

Grain Sorghums

Seed-Color Inheritance in Certain Grain-Sorghum Crosses, by J. B. Sieglinger. Submitted October 9, 1923, for publication in the Journal of Agricultural Research.

Minor Cereals

Growing of Rye in the Western Half of the United States, by J. H. Martin and R. W. Smith. Farmers' Bulletin 1353. Submitted March 16, 1923; galley proof read August 4; page proof, August 29.

General or Miscellaneous

Experiments with Cereals at the Akron Field Station in Colorado, by F. A. Coffman. Submitted August 31, 1923, for publication as a Department Bulletin.

Student's Method for Interpreting Paired Experiments, by H. H. Love and A. M. Brunson. Approved December 5, 1923, for publication in the Journal of the American Society of Agronomy.

Adjusting Yields to their Regression on a Moving Average, as a Means of Correcting for Soil Heterogeneity, by Frederick D. Richey. Submitted October 8, 1923, for publication in the Journal of Agricultural Research.

PATHOLOGIC SUBJECTS

Imperfect and Sac Fungi, etc.

Disease Resistance as a Factor in the Control of Plant Diseases, by James C. Dickson. Approved August 1, 1923, for publication in the Transactions of the Wisconsin State Horticultural Society.

Rosette Disease of Wheat and its Control, by A. G. Johnson, H. H. McKinney, R. W. Webb, and C. E. Leighty. Submitted June 19, 1923, for publication in Farmers' Bulletin series to supersede Farmers' Bulletin 1226.

Investigations on the Nematode Disease of Cereals Caused by Tylenchus tritici, by R. W. Leukel. Submitted December 17, 1923, for publication as Department Bulletin.

Influence of Soil Temperature and Moisture on Infection of Wheat Seedlings by Helminthosporium sativum, by Harold H. McKinney. Submitted March 30, 1923, for publication in the Journal of Agricultural Research; galley proof read October 4. Will appear in Vol. 26, no. 5.

Intracellular Bodies Associated with the Rosette Disease and a Mosaic-Like Leaf Mottling of Wheat, by H. H. McKinney, Sophia H. Eckerson, and R. W. Webb. Submitted September 20, 1923, for publication in the Journal of Agricultural Research; galley proof read December 15; page proof December 28. Will appear in Vol. 26, no. 12.

The Black-Bundle Disease of Corn, by Charles S. Reddy and James R. Holbert. Submitted September 12, 1923, for publication in the Journal of Agricultural Research.

Varietal Resistance in Winter Wheat to the Rosette Disease, by R. W. Webb, C. E. Leighty, G. H. Dungan and J. B. Kendrick. Submitted April 27, 1923, for publication in the Journal of Agricultural Research; galley proof read, November 20; page proof, December 12. Will appear in Vol. 26, no. 6.

Rusts

Cytological Studies of Infection of Baart, Kanred, and Mindum Wheats by Puccinia graminis tritici Forms III and XIX, by Ruth F. Allen. Submitted May 8, 1923, for publication in the Journal of Agricultural Research; galley proof read December 19. Will appear in Vol. 26, no. 12.

Relation of Barberries to Stem Rust of Wheat, by K. E. Beeson. Approved February 7, 1923, for publication in the Proceedings of the Indiana Academy of Sciences.

Morphological and Physiological Studies on the Resistance of Wheat to Puccinia graminis tritici (Pers.) Erikss. and Henn., by C. R. Hursh. Submitted October 10, 1923, for publication in the Journal of Agricultural Research.

Barberry Eradication in Illinois, by F. E. Kempton, G. C. Curran and E. D. Griffin. Approved June 6, 1923, for publication in the Proceedings of the Illinois Academy of Sciences.

The Effect of Fertilizers on the Development of Stem Rust of Wheat, by E. C. Stakman and O. S. Aamodt. Submitted October 9, 1923, for publication in the Journal of Agricultural Research.

The Effect of Rust Infection upon the Water Requirement of Wheat, by Freeman Weiss. Submitted October 10, 1923, for publication in the Journal of Agricultural Research.

Downy Mildews

Nocturnal Production of Conidia by *Sclerospora graminicola*, by Wm. H. Weston, Jr. Submitted December 5, 1923, for publication in the Journal of Agricultural Research.

Smuts

Experiments with Flag Smut of Wheat and the Causal Fungus, *Urocystis tritici* Kcke., by Miss Marion A. Griffiths. Submitted November 21, 1923, for publication in the Journal of Agricultural Research.

Sorghum Smuts and Varietal Resistance in Sorghums, by Leo E. Melchers and George M. Reed. Submitted August 31, 1923, for publication as a Department Bulletin.

Studies on the Parasitism of *Urocystis tritici* Koern., the Organism Causing Flag Smut of Wheat, by Robert J. Noble. Submitted November 21, 1923, for publication in the Journal of Agricultural Research.

Varietal Resistance or Susceptibility of Oats to Loose and Covered Smuts, by G. M. Reed. Submitted October 20, 1923, for publication as a Department Bulletin.

Relative Resistance of Wheat to Bunt (*Tilletia tritici*) in the Pacific Coast States, by W. H. Tisdale, J. H. Martin, F. N. Briggs, W. W. Mackie, H. M. Woolman, D. E. Stephens, E. F. Gaines, and F. J. Stevenson. Submitted December 13, 1923, for publication as a Department Bulletin.

Studies in the Physiology and Control of Bunt or Stinking Smut of Wheat, by H. M. Woolman and H. B. Humphrey. Submitted December 8, 1922, for publication as Department Bulletin.

Summary of Literature on Bunt or Stinking Smut of Wheat, by H. M. Woolman and H. B. Humphrey. Submitted December 9, 1922, for publication as Department Bulletin.

Bacteriological Diseases

A Bacterial Stripe Disease of Proso Millet, by Charlotte Elliott. Submitted March 13, 1923, for publication in the Journal of Agricultural Research. Will appear in Vol. 26, no. 4.

PHYSIOLOGICAL AND CHEMICAL SUBJECTS

The Extraction of Nitrogenous Constituents from Plant Cells, by W. E. Totttingham, E. R. Schulz, and S. Lepkovsky. Approved September 20, 1923, for publication in the Journal of Biological Chemistry.

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